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PROFESSOR OF PHARMACOLOGY, UNIVERSITY OF LONDON; PRESIDENT OF THE SECTION OF THERAPEUTICS.

CERTAIN work done during the past few years in examining widely advertised proprietary medicines impressed upon me the light-hearted manner in which some firms made sweeping therapeutic claims for their products, claims in support of which they had little or no direct evidence. In addition I found that when evidence was laboriously collected which indicated that these claims were erroneous, this usually made no difference whatever in the advertised statements. I was therefore naturally led to inquire as to what safeguards existed in England to ensure that the claims made in advertisements of drugs were at least not demonstrably false. I found, as a matter of fact, that no such safeguards existed. Reputable firms, out of regard for their good names, are, of course, careful as to what claims they make in advertisements, but beyond this the public has no protection. In my opinion this state of things is extremely prejudicial to the progress of therapeutics, and it is highly desirable that the medical profession should devise some sort of organisation for its own protection in this regard.

The quack is, of course, as old, or older, than the medical profession, but the exploitation of therapeutics by large commercial concerns was a development of the latter half of the nineteenth century mainly due to the rise of modern methods of large-scale advertisement. A company with extensive capital can employ more skilled assistance in conducting propaganda, and hence there is a general tendency for the cruder forms of gaining the public ear to disappear and to be replaced by much more refined methods.

The capitalisation of the drug industry has brought many very important benefits to medicine, for it has rendered possible the production of drugs of uniform quality, and it also has been of great help in the organised search for new remedies, yet it has introduced new evils.

There is no need to remind you that the trade in secret or quack remedies is an unmixed evil, but it is important to remember how large and powerful is the quack medicine trade. It was recently estimated that the capital employed in America in making secret remedies was larger than that employed in the legitimate drug trade. In England it was estimated that in 1913 more than £4,000,000 was spent in such remedies, and that the trade spent £2,000,000 in advertising. I mention these facts as evidence that very powerful and extensive commercial interests are engaged, and as I shall show later, there is no guarantee that this trade may not turn its attention to the medical profession if it conceives that exploitation of the medical profession will yield quicker profits than exploitation of the general public. At present the medical profession has practically no organisation available for its defence against such a move.

PROFESSION AND PUBLIC ALIKE UNPROTECTED BY LAW.

It is important to note that the law affords no protection whatever to the public or to the medical profession against any form of exploitation by proprietary medicine vendors, as long as these avoid the laws relating to obscenity. The law on the subject was summarised in the report of the Select Committee on Patent Medicines in 1914[1] as follows:—

> 22. The situation therefore as regards the sale and advertisement of patent and proprietary medicines and articles may be summarised in one sentence as follows. For all practical purposes British law is powerless to prevent any person from procuring any drug or making any mixture, whether potent or without any therapeutical activity whatever (so long as it does not contain a scheduled poison), advertising it in any decent terms as a cure for any disease or ailment, recommending it by bogus testimonials and the invented opinions and facsimile signatures of fictitious physicians, and selling it under any name he chooses, on the payment of a small stamp duty, for any price he can persuade a credulous public to pay.

The same Committee also came to these additional conclusions:—

> 55. (7) That the existing law is chaotic and has proved inoperative, and that successful prosecution for fraud in the advertisement and sale of secret remedies is fraught with the gravest difficulty, although the public prosecutor has perhaps not sufficiently tested the powers of the existing law in respect to such cases. (8) That consequently the traffic in secret remedies, except as regards scheduled poisons and the grosser forms of improprietary, is practically uncontrolled in this country.

The objection will at once be raised that these paragraphs refer to the obvious nostrums advertised in the lay press, nostrums which the medical profession has consistently denounced, and which really are of little concern to medical men. Unfortunately, it is impossible to make any easy definition which will divide such blatant frauds from proprietary medicines of highest therapeutic value. These extremes are so utterly dissimilar that it is hard to believe there is any relation between them, yet every possible intermediate grade exists, and it is a matter of utmost difficulty to establish any formula to determine which proprietary articles should be recognised by the medical profession and which should be condemned. There is, in fact, no definite line that can be clearly drawn between quack medicines and reputable proprietary articles.

There are, of course, certain classes of articles that the medical profession can condemn at once. Secret remedies require no discussion, for it is contrary to every professional tradition for a doctor to prescribe a remedy of whose composition he is ignorant. The advertisement of a secret remedy is, however, merely an indication of a lack of ingenuity and imagination on the part of the manufacturer. Nothing is simpler than to give a formula, and to claim either that one of the ingredients is obtainable only by the manufacturer, or that the value of the medicine depends upon the exquisite skill with which the ingredients are prepared and compounded.

THE ASTUTENESS OF THE ADVERTISER.

The rule that articles are to be advertised to the medical profession only is also absolutely worthless as a guarantee against fraud. Advertising to the public direct is expensive, whilst advertising to or even circularising the medical profession is relatively cheap. Hence it may pay better for a firm to confine itself to the medical profession. The same form of advertisement will not, of course, appeal equally to the lay mind and the medical man, but a skilled advertiser can exploit the latter. This danger became acute some years ago in America. I quote some remarks by Dr. G. H. Simmons, Editor of the *Journal of the American Medical Association*.[3]

> It has become a recognised fact in the patent medicine field that the easiest and cheapest way of reaching the public is through the doctor. Let me quote a paragraph that appeared in *Printers' Ink*, an advertising journal (about 1903). The words are those of a patent medicine man, and they are not directed to the medical profession. "But the patent medicine of the future is one that will be advertised only to doctors. Some of the most profitable remedies of the present time are of this class. They are called proprietary remedies. The general public never hears of them through the daily press. All their publicity is secured through the medical press, by means of the manufacturers' literature, sometimes gotten out in the form of a medical journal, and through samples to doctors. . . .

The original bottle is given to the patient; he sees that the remedy does him good, and when he feels a trifle run down again he goes to a drug store and buys another bottle, not troubling the doctor. He meets a friend on the street who is not looking well. 'I know exactly how you feel,' he says. 'Now just go and buy a bottle of . . . Best thing in the world. My doctor prescribed it for me, so it isn't a patent medicine.' In this way the names of remedies advertised only to physicians get abroad to the general public. The proprietary medicine of the future though will be advertised through these channels. The medical papers will reap the harvest, and the physician himself, always so loud in the denunciation of patent medicines, will be the most important medium of advertising at the command of the proprietary manufacturer."

Dr. Simmons concludes: "Have you ever seen an arraignment of this evil by its enemies which equals this cynical statement by its friends?" This quotation is, I think, sufficient to show that there are no simple rules by which the medical profession can protect itself against exploitation.

There are, as I have said, a vast range of proprietary medicines varying from valuable scientific preparations, such as the best brands of organic arsenical preparations down to the lowest form of quack frauds. The law is absolutely impotent, and medical men have got to make up their minds what they are prepared to recognise and what to reject. Huge commercial interests are involved, for it must be recognised that the more nearly a preparation approaches a fraud the more likely it is to reap a rich immediate harvest. Obviously an unscrupulous manufacturer will consider what types of chronic diseases are particularly refractory to treatment, and choose in preference those which are painful and afflict well-to-do patients. Such diseases are, of course, the despair of the general practitioner, and he will always be ready to try anything new that can possibly be of benefit. In preparing the remedy the manufacturer will probably select some new scientific discovery which is a novelty, and whose powers are still undefined. It is a great advantage, of course, if the substance is such that there is no easy method of testing its purity or activity. Any nostrum can obtain support from some medical man or another, if not in England at any rate on the Continent, and then the rest is easy, a commercial interest is there ready to boom the preparation; and it is not the business of anybody to check the statements made. Obviously the general practitioner who is not an analytical chemist, nor an experimental pharmacologist, nor a secret inquiry agency, has no means of testing the inherent probability of a new remedy. On the other hand, the exploiters of a new remedy have the power of money behind them to promote the sales and profits.

As regards the attitude of medical men to doubtful proprietary remedies, the following extracts from the Select Committee on Patent Medicines are of interest:

29. With regard to advertisements in the medical press, we consider that adequate censorship has not in all cases been exercised, as, indeed, was admitted by Dr. Cox, the representative of the British Medical Association, and instances to this effect will be found in the evidence received.

47. We have learned, however, to our great surprise, that persons of influential social positions and small means will sell the use of their names to advertise secret remedies; that large sums of money are expended in canvassing medical men; that many medical men give testimonials (with the use of their medical qualifications, but without the use of their names) to proprietary and secret remedies, and allow themselves to be made, as a medical man declared in a public address, "the catspaw and fool of the fraternity of the secret remedy"; and that there are medical men who prescribe to their patients remedies of this class of whose composition they are themselves largely ignorant. We have evidence in two cases of medical men acting as directors of companies manufacturing secret remedies.

The evil of proprietary medicines developed, perhaps, to a greater extent in America than in this country. The evil first became obvious about 1879, and early in the century the position was defined as follows by Dr. Simmons[3]:—

Conditions in this regard had become so disgraceful . . . that there seemed to be no statement too silly, no claim too extravagant, and no falsehood too brazen for use by those who wrote the advertising literature that physicians are asked to read and believe. . . . In brief, this business, the annual profits of which run into millions, has grown until the use of proprietary medicines by many physicians has almost displaced the use of the individual official drug. It has checked advance in scientific methods of treatment, inhibited intelligent clinical observation, and developed an optimism that is unwarranted by facts, an optimism that is more fatal than the most radical therapeutic nihilism. But above and worse than all, this commercialised materia medica has blighted our literature by debauching our medical journals and even by tainting our text-books.

These are strong words, and picture an evil somewhat worse than any that we have in this country to-day. These evils produced, however, a reaction in America, and steps were taken to check the evil, whereas in our country it still flourishes unchecked.

AMERICAN AND BRITISH METHODS OF COMBATING QUACKERY.

The American Medical Association in 1905 appointed a council on pharmacy and chemistry composed of leading chemists, pharmacologists, and clinicians. These examined all proprietary remedies, and published a list and description of all such remedies as conformed to certain simple rules. This list is published annually under the title of "New and Non-Official Remedies."[4] Substances which are rejected are dealt with in the volumes, "Nostrums and Quackery" and "Propaganda for Reform." The rules upon which the council worked were roughly as follows. The drug must not be of secret composition, must not be advertised directly to the public, and must not be advertised indirectly to the public by means of literature sent with the bottle stating the disease it is intended to cure; the name must not suggest therapeutic claims; unwarranted, exaggerated, or misleading statements as to the therapeutic value must not be made; and no article is accepted which is useless on account of its unscientific composition. Of these rules the last two are obviously largely matters of opinion, but are perhaps the most important of all. The American medical practitioner, therefore, who is deluded by specious advertisements into recommending some useless nostrum, has only himself to blame, since he is acting against the considered advice of a body of expert opinion.

In other countries also an attempt has been made to set up some machinery to judge the claims of advertisement of proprietary articles. The *Medical Journal of Australia*,[5] for example, has arranged to conduct analysis of Australian proprietary products submitted for advertisement. In Holland[6] the Rijks-Instituut voor Pharmace Therapeutisch Onderzoek has conducted a series of analyses on patent and proprietary preparations. In the case of the latter the combined chemical, pharmacological, and clinical tests have been undertaken, providing very valuable information.

In this country valuable work has been done by THE LANCET in publishing chemical analyses of proprietary preparations. The British Medical Association ten years ago did a particularly valuable public service in publishing the two excellent volumes: "Secret Remedies, What They Cost and What They Contain."[2] The British Medical Association, moreover, has passed various resolutions regarding preparations which it is prepared to accept for advertisement in its publications. The most important regulations exclude advertisement containing any demonstrated false statement, and preparations the principal ingredients of which are not disclosed to the profession, and preparations which are advertised elsewhere in a misleading or objectionable manner.

THE NEED OF EFFECTIVE CONTROL.

The measures which have been taken in England are of value, but I think that it is clear that nothing short of an organisation permitting extensive chemical and pharmacological tests, and in certain cases even clinical tests, is sufficient to give reliable information on the really important point—namely, whether the therapeutic claims made for a proprietary remedy are based on reasonably satisfactory evidence. American experience has demonstrated that it is possible to provide such a source of information, and that it is of

great service to the medical profession, but it has also shown that the work is difficult and expensive, and that if effective is certain to arouse furious opposition from the vested interests it injures. The object of my paper is to point out the desirability, nay, even the necessity, of having some organisation in this country to perform a similar work.

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The Principles of SYMPTOMATOLOGY:

AN INTRODUCTION TO A NEW OUTLOOK IN MEDICINE.

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IN THREE PARTS.—PART III.

In Part I. (THE LANCET, *Nov. 3rd*) *there was outlined the general problem of ill-health and the new outlook in its respect. The principle of the "reflex arc" was explained. In Part II.* (*Nov. 10th*) *the cell and the law of fluctuation were considered and the afferent nervous system and the generation of impulse.*

8. STIMULATION.

We have seen that individual cells vary in their excitability—the process of recovery after stimulation varying according to a variety of circumstances. The question has to be considered how these cells act when in a community as when they constitute an organ. We know that organs vary in their functional activity, and there must be a great difference in the activity of these cells when the organ is working at the full extent of its powers and when its functional activity is reduced to the quiescent or resting stage. In the description of "fluctuation" it was suggested that when an organ is acting at full activity all the cells may be engaged, but that as it passes into quiescence some of the cells gradually become less excitable and take longer to recover, so that at one time one group of cells is active and at other times other cells are active, and in this way is brought about that variation in the activity of organs which is necessary to meet the requirements of the body in the ever varying circumstances of life.

As we proceed in our investigation we find this fluctuation universal, and it is impossible to understand such subjects as the stimulation and functional capacity of organs unless it be taken into consideration. To show the importance of fluctuation it may suffice to call attention to a factor which lies at the root of every problem—namely, stimulation. The varying activity of an organ is frequently due to the increase or decrease of nerve stimulation. When a nerve is stimulated the accepted teaching is that if it responds it does so with all its power, whether the stimulus be a weak one or a strong one, following the law of "all or nothing." When, then, a nerve is stimulated and an increased activity is shown by the organ which the nerve supplies, the response of the organ cannot be due to the *strength* of the stimulus, inasmuch as each nerve response is maximal. The only other alternative is that it must be due to an increase in the number of impulses.

The question then arises: In what way can the number of impulses be increased? The answer is simple, either by the increase of the number of impulses in a unit of time, or by an increase of the number of cells (neurones) taking part in the stimulation. It was not easy to decide which of these two ways are concerned in stimulation, until we applied the results of our observations on the skin, to which reference has been made. It was found that there were really no permanent "hot and cold spots." At one time small areas were sensitive and other areas were insensitive. At other times the sensitive areas became insensitive, and the insensitive areas became sensitive.

One aspect of the problem of stimulation was solved in a simple manner. A mustard leaf was applied to the skin and it was afterwards found that practically every point of the surface became sensitive to warmth. The conclusion drawn from this experiment is that stimulation means an increase in the number of receptors rendered active. Applying such results to the explanation of stimulation, a quiescent state means that all the cells of an organ are not acting, but when "stimulated" more or all of them become active. The application of this law of fluctuation to the interpretation of normal reactions as well as symptoms, clears up many obscurities. The law of "all or nothing," for instance, which has been accepted as explaining certain of the features of nerve activity and of the heart is wrongly applied in that while it is true of the individual neurone or of the individual muscle fibre, it is not true of the organs of which they are constituent elements. The recognition of this permits us now to understand the ability of organs like the heart to respond to effort, for the commonly accepted law that when the heart responded by "all or nothing" prevented us understanding how it could vary its activity, and rendered it impossible to understand the production of heart failure. The manner in which an excitable part of the reflex arc may increase the number of impulses which reach the effector organ and produce a symptom is explained by the law of fluctuation. Under normal circumstances, and especially when quiescent, only a portion of the cells which constitute a unit in the reflex arc are functioning. Certain agents, as a rise of temperature, the toxins of disease, or a drug, increase the excitability of a unit by increasing the number of cells which are functioning at a given time. The result will be that a stimulus reaching this unit will, under normal circumstances, excite only a few cells of that unit, but if rendered excitable under the influence of the factors or agents mentioned above, the same stimulus will set in action a much greater number of cells.

As this variation may take place at different parts of the reflex arc, we find symptoms due to disturbances at the receptor or in some part of the conducting system, or at the effector part of the process. This is well seen in the case of the heart. In the normal acting heart its rhythm is dependent upon the pacemaker—the sino-auricular node, Fig. 4. An increase in rate may arise from an increase of impulses at the receptor end of the reflex. An increase in the heart rate has been shown to be produced by contraction of the muscles of the calf (Fig. 7). Here the increase of rate is due to the increase in the number of impulses produced by the contracting muscle.

Another proof of the production of symptoms by diminished resistance to stimulation is seen in the different ways in which vomiting is produced. The production of vomiting by an increase of impulses will be commented upon in dealing with the contraction of hollow viscera, as in renal colic. Vomiting may be produced by a stimulus which in ordinary circumstances has no such effect. When a person sickens of some febrile complaint, or in transient attacks of ill-health (like migraine), sights, sounds, or smells, which in health produce no effect upon the processes concerned in the act of vomiting, may readily provoke nausea and retching. Emetic drugs act in the same way. They do not themselves produce vomiting, they merely lower the resistance to stimulation of some part of the reflex arc, so that impulses which in health would produce no result, in these

altered circumstances produce vomiting. Strychnine and the toxins of rabies do not produce convulsions, they merely render certain parts of the reflex arc so excitable that normal impulses reaching them produce an exaggerated effect. A decayed tooth often sets up pain and a hypersensitive state of the neighbouring tissues. Sometimes the skin of the cheek becomes hypersensitive, so that stroking of the skin or the hairs of the cheek produces pain, while on the other cheek the same stimulus produces only the sensation of touch.

An increase in the sensitiveness of the skin and deeper tissues is common in a great many diseases, especially those of the abdominal organs. As the tissues which are rendered tender, and the area in which the tenderness occurs is very definite, the symptoms become a valuable diagnostic aid in the hands of those who know how to use it. It will become still more valuable when we discover the nature of the vital processes which are capable of producing it. Here, however, we are concerned with the changed conditions which render the skin and deeper tissues hypersensitive. The fact that stimulation of the skin provokes pain in a limited region, while the same stimulus produces only the sensation of touch or pressure when applied to other regions, indicates that somewhere between the receptor end of a nerve in the skin and the centre of consciousness there is a part whose resistance to stimulation is diminished. It would be too speculative to indicate the exact part—the recognition of the fact is sufficient for the present. The part of the central nervous system which is rendered irritable as shown by these localised areas of hyperalgesia is of small extent. A similar disturbance can be of greater extent and not necessarily associated with cutaneous hyperalgesia. In the condition called the status anginosus, the repeated attacks of angina pectoris have lowered the resistance to stimulation of some part of the central nervous system to such an extent that impulses from other regions than the heart may produce severe attacks of the pain, exactly like those of angina. The pressure of the stethoscope under the left breast, the movement of the left arm, may readily provoke an attack of agonising pain identical with that which follows bodily effort.

This facilitation of impulses may become generalised. In what is called neurasthenia we get evidences that many symptoms are rendered possible because of the lowered resistance to stimulation. Under such circumstances, the normal activity of an organ may result in the production of symptoms identical with those which are produced by disease of that organ. This lowered resistance is probably always due to some agent acting upon some unit of the reflex or regulating process—not affecting equally the processes of all organs. The result is an excessive activity of one or more organs, and the complaint is apt to be attributed to the organ whose activity is most prominent, hence the different names given to neurasthenia—gastric, cardiac, mental, &c. It is not always possible to recognise the primary agent in the production of neurasthenia, but occasionally we meet with instances that leave little doubt as to the origin of the trouble, as in the following.

A woman of 53 fell into ill-health, at first of a vague, indefinite "neurasthenic" kind. After some months the heart became irritable and pain was felt in the left chest. The pain increased in severity and occurred in attacks identical with those of angina pectoris and were looked upon by her medical attendants as being of this nature and of a grave type. After some months of this suffering an abscess burst into the bladder, and there was a profuse discharge of pus in the urine. From this date the attacks of angina completely ceased and a good recovery followed.

Surgeons are well acquainted with patients who suffer from severe gastric symptoms which lead to the view that there is some organic trouble in the stomach. Operations have repeatedly demonstrated that there is nothing amiss—organically—with the organ. The explanation seems to be that in certain states of lowered resistance the normal function of the organ gives rise to impulses which in health pass into the central nervous system unperceived, but with the resistance of some part of the nervous system lowered, these impulses produce effects which are looked upon as symptoms of disease.

Such seems to be the explanation of the following experience:—

A youth suffered from an attack of gall-stone colic with jaundice. There appeared after the attack of pain an area of cutaneous hyperalgesia—very acute—over the upper part of the abdomen on the right side. The stone was passed per anum and the attack of pain ceased, but the hyperalgesia persisted for a few days. For some days after when the patient took a meal he always suffered from pain in the epigastric region. As the hyperalgesia disappeared the pain became less severe, and when the hyperalgesia was gone the pain ceased. The interpretation we give of such an experience is that the impulses from the muscle fibres of the gall-ducts had temporarily rendered some part of the central nervous system hyperexcitable, so that slight stimulation reaching it, either from the skin or from the stomach, produced an exaggerated effect shown by pain. With the gradual subsidence of the excitability the impulses from the skin and stomach ceased to produce pain.

While stimulation is due to the increase in the number of cells (neurones) participating in sending the stimulus, it may also arise from increased excitability of the cells. Thus the S.-A. node which regulates the heart beat can be rendered more excitable in a number of ways. When the heart increases in rate it is due to the increased excitability of the S.-A. node or in abnormal rhythm of the A.-V. node (Fig. 4). That is to say, the recovery after the node has discharged its impulses is expedited. This may be due to a number of factors, as the rise of temperature in feverish states, the action of drugs and toxins, the increase of impulses from the brain or periphery, the diminution of vagal control, &c. If it is desired to understand the reason for an increased pulse-rate the application of the principle of the reflex arc compels the analysis to find the element at which the disturbance takes place and which of the causes just enumerated is operative.

9. INCREASED IMPULSES FROM MUSCLE.

While we have undoubted evidences that the cells of an organ generate impulses which can affect other organs when they function we have to consider the part they play in the production of symptoms. In describing the production of goose-skin by stimulating the skin it was shown that impulses were not sent only to one organ but spread widely, affecting a number of organs, and the reason that such effects may not be recognised is due to the fact that we do not possess the means of detecting them in the healthy body. But when the agents of disease disturb the functions of organs by increasing or decreasing their activity, then the evidence of the presence of these impulses may be detected in the disturbance of a number of organs.

The muscular system, by reason of its wide range of activity and of its susceptibility to stimulation, is a fertile source for the production of impulses. When a muscle is at rest it is in a state called "tone." This is maintained by the action of its cells, but all are not acting simultaneously. Each cell alternates between periods of rest and of activity. Muscles are liable to be stimulated to excessive effort, and when this happens many more muscle cells contract and the impulses that arise are greatly increased in number. These impulses being conveyed by afferent nerves into the central nervous system, stimulate the organs whose efferent nerves they reach into unusual activity. In this way is produced a peculiar train of symptoms the result of increased muscular activity.

It has long been recognised that some of the severest pains are associated with hollow muscular organs. The explanation of this seems to be as follows: Muscular organs consist of a great number of muscle cells. In the performance of their normal function they contract with varying degrees of strength. So long as the contractions are moderate in degree no sensation is experienced. In these circumstances,

according to the law of fluctuation, all the cells do not act at one time, some being active and passing into quiescence, while others pass out of quiescence into an active state. When moderate stimulation takes place and the muscle is roused to greater activity an increased number of cells are brought into action and fewer are quiescent. With still greater activity all the cells may be forced into activity. Each cell when it passes into activity throws out an impulse and these impulses, we have seen, are taken up by afferent nerves and conveyed into the central nervous system, where they stimulate the nerves that supply other organs. There is bound to be a greater outflow of these impulses with increased activity, and in this way more afferent nerves are stimulated, producing the results which occur in the various colics—pain, nausea, vomiting, pallor, retching, &c. This interpretation also affords an explanation why, of all the organs of the body, the hollow muscular organs give rise so readily to pain and other symptoms, in that the muscle is the organ most easily stimulated to violent activity. We possess little or no power of increasing the functional activity of the cells of the kidney, liver, pancreas, &c., and hence it is that severe pains are not associated with affections of these organs. That they may give rise to disturbances of a milder sort is quite likely, indeed, our researches indicate their presence, but so far we are not able definitely to demonstrate their relation to this cause.

While the evidence which reveals the nature of the stimulus which produces symptoms is mostly inferential, rare opportunities arise which bring us more closely to the real cause. The following experience demonstrates the relation of pain to muscle contraction :—

A man had a fistula at the umbilicus communicating with the small intestine. An operation was decided upon. The patient refused an anæsthetic, and as the skin around the opening had ulcerated away an incision through the abdominal wall was made with little or no suffering. The abdominal cavity was thus laid open and numerous peritoneal adhesions broken down and the patient felt nothing. The bowel and mesentery were cut and stitched and no sensation was felt. After preparing the upper part of the bowel it was wrapped in a warm cloth and laid on one side. During the subsequent steps of the operation the patient frequently moaned. He was asked if he felt pain and he replied that he did. He was asked where he felt the pain, and he indicated with his hand that it was across the middle line at the level of the umbilicus. It seemed at first that the pain might be due to the part that was being manipulated, but the pain was intermittent. Chancing to look at the prepared upper part of the bowel that lay on the left side of the abdomen, it was observed that every few minutes a peristaltic wave passed over the lower portion of it, and when this occurred the patient moaned in pain. To make certain that the pain was connected with the peristaltic wave the peristalsis was produced several times by lightly pinching the bowel. Every time the wave was produced the patient felt the pain and the pain ceased when the peristalsis stopped.

It is well known that the various colics—bowel, renal, and gall-stone—are associated with more symptoms than pain, and there is good reason for inferring that the processes which are concerned in their production are similar to those which result in pain. The following two observations illustrate the kind of phenomena which occur during renal colic :—

A man, aged 30, had suffered for a year from occasional attacks of renal colic, and one attack had been followed by hæmaturia. He was a very intelligent man and was told to note every particular during an attack. The following is a summary of his statement—the statement being illustrated by the patient placing his hand over the regions mentioned : The pain suddenly seizes him with great severity in the right lumbar region, then after a few minutes it strikes into the front of the abdomen over the iliac fossa. Then the belly becomes hard and rigid. The pain then strikes down into the inner side of the groin, the testicle is felt to be drawn up, and the pain then shoots into the testicle. The facts here described were corroborated by him in a few subsequent attacks, each attack invariably pursuing the same sequence. Notes made after an attack describe an indefinite area of cutaneous hyperalgesia over the iliac fossa, hardness and rigidity of the abdominal muscles over the right iliac fossa with great tenderness on pressing over the abdominal muscles and on the right testicle and on the spinal muscles in the lumbar region. The fact that the pain always started at the same place indicated that the stone remained fixed in its position, a view confirmed in that there was never any evidence of the calculus having reached the bladder. An X ray photograph failed to reveal the stone. He was operated upon and a small calculus about the size of a pin's head was found adherent to the apex of a calyx opposite the junction of the middle and lower third of the pelvis of the kidney. This was removed and the patient made a good recovery and remained quite free from all symptoms.

The conclusion suggested is that the presence of the calculus at times provoked the muscle of the ureter to violent peristalsis, and that this was the source of the impulses which provoked the train of symptoms.

A male, aged 31, suffered from severe attacks of pain in the abdomen accompanied by great hardness of the muscles of the abdominal wall. The attacks of pain were accompanied sometimes with vomiting, and as the bowels had not been moved and no flatus had passed the condition at first resembled that of obstruction of the bowel. An examination revealed a somewhat distended abdomen with great rigidity of the muscles. This form of contraction also affected the muscles of the anal sphincter, for it was with the greatest difficulty an exploring finger could be forced into the rectum. The patient's description of the pain, its site and radiation was rather confused, but at the end of the examination he was seized with an attack of pain. The pulse became slow and soft. He became pale and sweat poured out. He was asked to put his hand where he felt the pain and he indicated the left lumbar region. As the pain increased in severity it shifted round to the front and remained definitely fixed over the left iliac fossa. After a few minutes it passed off. A diagnosis was given of renal calculus. An opiate was prescribed and next day a calculus the size of a pea was voided with the urine, and all the symptoms disappeared.

The group of symptoms just described as occurring in attacks of renal colic, involves the abnormal activity of afferent nerve fibres. In such instances we see the wide range of their effect, inasmuch as they convey impulses which disturb many organs widely sundered, as in the production of nausea and vomiting, depression of the heart's action, pallor and sweating, contraction of the abdominal muscles, pain, and cutaneous hyperalgesia. We can further infer that in the normal processes of life impulses are conveyed from all active organs into the central nervous system, and these impulses act upon the processes concerned in regulating those organs which give rise to such striking symptoms—as the brain, heart, the stomach, the muscle of the abdominal wall, the vaso-motor system, the sweat glands, &c. The best example of this action is the pain set up by uterine contraction. All the phenomena just described as occurring in renal colic can be made out with each labour pain. The same phenomena occur even in the unimpregnated uterus during menstruation, or when a foreign body is introduced into the uterine cavity.

But there is more in the matter. It is customary to speak of such pain as being due to stimulation of a pain nerve which supplies the ureter or uterus. When all the facts are considered it will be found such an inference is unnecessary. The fact that vomiting occurs during an attack of renal colic does not imply that there is a special vomiting nerve distributed to the ureter, or because the heart's action is modified that there is a special cardiac nerve, or because pain is felt that the ureter is supplied with a pain nerve.

It can be more reasonably assumed that the impulses which arise during violent contraction are greatly increased in number, and that the various disturbances (or symptoms) which result are due to the increased number of impulses which react on those parts or "centres" in the central nervous system which habitually receive the impulses in health. That is to say, pain does not arise in these muscular organs because they are supplied with a nerve whose special function is to convey a "pain" stimulus; but pain, like vomiting and other manifestations, is caused by the greatly increased number of impulses that reach the pain, vomiting, and other centres in the central nervous system.

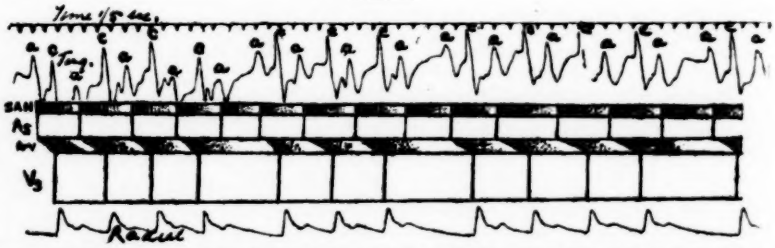
10. INHIBITION, BLOCKING OF IMPULSES, AND PARALYSIS.

We have seen that, as a result of disease, the impulses may be increased in number at their origin or during their transmission, and an undue activity of the organ may result, giving rise to symptoms. The reaction may be in the opposite direction, and depress or suppress the function of organs. This may be brought about in several ways, as by structural changes, or by defective blood-supply, or by the agents of disease acting upon the parts which regulate the organs inhibiting or blocking the impulses. It is the last of these that is being considered here.

The blocking of impulses is but an exaggeration of that normal increase of resistance to stimulation which occurs in every cell during and after exercising its function. The blocking of impulses at the auriculo-ventricular node affords the best illustration of the production of symptoms in this manner.

A girl of 14 recently fell ill of a slight febrile attack, during which her pulse became irregular. This irregularity continued for two days, after which the rhythm became regular and the girl made a complete recovery. A simultaneous record of the radial and jugular pulses (Fig. 8) shows that the auricle (waves, *a*, in the jugular record) contracted regularly, but that the ventricle (waves (*c*) and the radial pulse) did not respond to every auricular wave. This is brought out in the interpolated diagram. The shading in the space S.-A. N. represents the discharge of impulses from the sino-auricular node, the shading representing the refractory period. The down strokes in the space As represent the auricular systole (*a*) in the jugular tracing, and the down strokes in the space Vs represent the radial pulse (ventricular systole). The space A.-V. represents the auriculo-ventricular node. The shaded portion of the A.-V. space represents the period when the node was incapable of stimulation, and it is shown that every now and again the auricular impulses fell during this period and failed to reach the ventricle, so that a ventricular systole fell out—that is to say, the pauses in the radial pulse which produced the symptoms of irregularity were due to the blocking of impulses by an undue increase in the resistance to stimulation of the cells of the A.-V. node.

FIG. 8.



Tracings of the jugular and radial pulses. In the jugular tracings the auricular waves (*a*) are regular, but the radial pulse shows intermissions. The waves (*c*) are due to the carotid and correspond to the radial beats. In the diagram the intermissions are shown to be due to blocking of impulses at the A.-V. node. The down strokes in the space As represent the auricular waves (*a*) in the jugular tracing, and the space Vs the ventricular systoles and radial pulse. The space A.-V. represents the A.-V. node, and it is seen to be here that the block takes place—the shading in the spaces S.-A. N. and A.-V. represents the refractory period of the sino-auricular and auriculo-ventricular nodes. The diagram illustrates the principles of the reflex arc.

Another instance of the same kind is found in certain paresis or paralysis such as that which follows diphtheria. Here the toxin of diphtheria picks out certain parts of the regulating process, and blocks the impulses which should reach the muscle. The part affected is probably some part of the efferent or motor nerve to the muscle. In all likelihood the condition known as "suppression of urine" results from a similar disturbance. But we know so little of the processes that regulate the function of the kidney or other organs that it is not possible to hazard more than a guess at the cause of this and many other functional disturbances. Clear-cut examples of symptoms produced by hindering or blocking of impulses are not common, partly because we do not know how to detect them. This is due not only to our defective knowledge of the regulating processes, but also to the peculiar manner in which the suspension of activity is manifested. In the regulation of the functions of organs there are nerves whose functions favour and others whose functions depress the activity of organs, like those supplying the dilator and constrictor muscle fibres of the pupil and the vagus and sympathetic supply of the heart. Impulses from these nerves may be blocked. Blocking of impulses may affect the parts normally concerned in increasing the resistance to stimulation—i.e., inhibition. The removal of this influence permits the opposite influence to act unchecked, so that the blocking of impulses may result in the organ exhibiting signs of increased activity. This part of the subject becomes clearer from the study of the phenomena produced by the action of drugs and allied substances.

This blocking of impulses may result in paralysis. The term paralysis is usually applied to the loss of voluntary control over a muscle whose connexion with the cerebral cortex is severed. It has been also applied to other organs whose functions are controlled by nerves when this control is lost, as in the so-called paralysis of glands like the salivary, vaso-motor paralysis, &c. It is of great importance to recognise what happens when a muscle or other organ is deprived of its nerve-supply. It must be remembered that they are supplied with other nerves and with blood, and that the cells have functional potentialities even when separated from their nerve-supply. Investigation on these lines reveals a great many results which give rise to symptoms of disease. Reference has been made to the fact that when a muscle loses its connexion with a motor nerve it does not lie inert, but passes into fibrillation. When the sino-auricular node ceases to act the auricle passes into fibrillation and flutter (see Fig. 6), and the impulses which the muscle fibres of the auricle throw out affect the A.-V. node, giving rise to very definite signs, such as a rapid and irregular pulse (delirium cordis). It is very likely that delirium, convulsions, migraine, and many other forms of cerebral attacks arise from the loss of control of the higher centres over limited parts of the brain.

11. THE ACTION OF DRUGS.

In our attempts to classify symptoms according to their affinity in nature—that is, according to the processes whose disturbance resulted in the production of a symptom—we met with difficulties that seemed insurmountable. For one thing, the agent whose reaction on the body produced the symptom could seldom be recognised; for another, when the patient became so ill that he had to consult the doctor the phenomena were so numerous and varied that it was difficult to detect their relation to an agent or to one another. Recognising that symptoms were, after all, only a modification of normal processes, it is possible by suitable means to modify these processes and produce phenomena identical with symptoms. Amongst these means was the giving of drugs. The action of drugs is practically that of the action of the toxins of disease, and it is often possible to imitate disease states by drugs and similar agents as gland extracts, vaccines, &c. The advantage of this method is that we can observe the condition of the individual before the drug is administered both in health and disease, and watch the way in which the drug picks out the tissue or organ on which it has a definite effect. Amongst those effects there may be one or more which reveal the exact part or unit in the reflex arc on which it acts, and by analogy we can infer its effect upon other organs where it is not possible so

clearly to recognise the part it affects. In this way a good deal of light can be thrown upon the nature of the symptoms of disease, as well as giving us a better understanding of the action of our remedies.

Although a good deal of work has been done on the action of drugs, the results have not been as much used as their importance deserves, nor has the importance of pharmacological experiment been fully grasped. We are greatly dependent on physiological experiment for our knowledge of the functions of organs, but there are great limitations to these methods, in that there are whole fields which are beyond their province, such as the sensations and the afferent nervous system. It has already been pointed out that the peculiar function of the afferent neurone lies in the peripheral branches of the fibre, and experiments which neglect this part, as in cutting and stimulation, will fail to reveal the function of the neurone. By the use of drugs the nervous system remains intact, and the manner of action of the drug and its effects resemble more closely those of a disease agent than a cutting experiment.

Though we are carrying on this line of investigation our results are as yet too scanty to justify us in dealing with them at any length. Here we give some results of our study of a few drugs merely to indicate the lines we pursue.

It may be considered that all drugs which produce one or more demonstrable effect produce at the same time a great many more effects which are unrecognised simply because we do not possess the means of detecting them. It is at times possible to recognise with fair certainty the manner in which a drug acts on a particular organ, and it may be reasonable to infer that it acts on the same kind of tissue in other organs although the effect as seen by the observer may be different. Such clearly recognised effects are more safely detected when the dose is minimal, for the reason that in large doses not only may confusion arise from the number of effects, but the disturbed function of one organ may modify the action of other organs, just as happens in certain forms of ill-health. The action of atropine, alcohol, digitalis, and chloroform afford good illustrations of the help we may get from comparing the production of symptoms with the effects produced by drugs.

Atropine.

The heart rate is dependent upon the sino-auricular node, as it discharges the impulses which stimulates the heart to beat. The cells of this node are peculiarly sensitive to agents which increase or decrease their excitability. The chief agents are the influences of the vagus and sympathetic nerves—the vagus decreasing the excitability and the sympathetics increasing it. Such effects are spoken of as inhibition and stimulation, but when we inquire more closely into their nature we find that on the one hand the vagus delays the metabolic process within the cells of the S.-A. node, so that it takes a longer time for the cells to renew their store of energy, and become susceptible to stimulation, and on the other hand the sympathetic acts by hastening the metabolic process. Atropine acts on the terminal branches of the vagus nerve, not on the nerve cell, but on the part of the neurone concerned in the special function of the nerve. As a result the metabolic process in the cells of the S.-A. node, to which reference has been made, is not delayed by the vagal effort, and the heart's rate becomes increased. Atropine acts on the terminal branches of that portion of the cranial nerve which supplies the pupil and ciliary muscles. The effect here is to prevent impulses reaching the constrictor of the pupil and the ciliary muscle, so that these muscles cease to act. While the atropine acts upon the same part of the nerve in both cases the effect is different. Suspension of vagal activity results in hastening the metabolic process in the S.-A. node; suspension of the activity of the third cranial nerve results in the blocking of impulses to the muscles. Atropine acts on the brain and produces delirium.

Alcohol.

It is not easy to explain satisfactorily all the phenomena due to the effect of alcohol, particularly as alcohol causes a dilatation of the blood-vessels and thus influences organs by an increased blood-supply. But certain manifestations can be recognised and referred with fair certainty to their cause. At a certain stage of intoxication certain muscular movements become impossible. These movements belong to a very definite group—namely, those which are acquired late in life, such as the movements involved in speech, in writing, in giving expression to the face, and in binocular vision. It is to be observed that the muscles in those cases are not paralysed, for however unsteady the hand may be it can still grasp the glass and raise it to the lips, and however difficult speech may be the same muscles when employed in swallowing are still shown to be active. It is manifest that here the impulses that should reach the muscles from the brain by the latest developed channels are blocked. This would suggest that in the later stages of alcoholism, whether resulting in a profound sleep or noisy delirium, processes of a similar kind are affected.

12. INCREASED ACTIVITY FROM THE BLOCKING OF IMPULSES.

The object of this analysis of the phenomena produced by atropine and alcohol is to disentangle the confused mass of symptoms which may be found in a sick man, under the influence of a drug or of the toxins, of a disease. The recognition of the nature of a single phenomenon may render it possible to find out the nature of others. In this attempt we must not be misled by the superficial character of the phenomena or symptoms, for they are but the expression or result of a disturbance, and are not themselves the cause of the disturbance. Though we may find an organ exhibiting signs of increased activity, we are not justified in concluding that the organ has been stimulated or that the agent causing the disturbance acts by stimulating the organ.

There are processes which are concerned in increasing and decreasing the activity of cells and they are normally in continuous action, the one restraining the activity of the other. If for any reason one of them ceases to act, the other is unrestrained, and there results an increase or decrease in activity of the organ. This balancing of activity is in action in regulating the heart rate and in regulating the size of the pupil. The actions of the vagus and sympathetic are antagonistic, because the function of the vagus is to increase the resistance to stimulation, while the sympathetic decreases it.

The removal of vagal influence over the heart allows the sympathetic to be unchecked, with the result that the heart's rate becomes greatly increased. Atropine acts in this way, so that if we did not know how it acted we would be inclined to say that atropine was a "cardiac stimulant." In the same way atropine blocks the impulses from the third cranial nerve, so that dilatation of the pupil results, and we say that atropine causes dilatation of the pupil, whereas, what it really does is to allow the dilator pupillæ to act unchecked. The delirium which results from atropine or alcohol is described by authorities as being due to these drugs "stimulating the brain." It is more likely that the condition is one in which a controlling or restraining influence is lost. This is specially likely to be the case when we reflect what a slight quantity of an agent may produce the effect. Thus, a few drops of atropine put into the eye may produce not only a dilatation of the pupil, but also delirium. It is a reasonable inference that the drug acted in the eye and in the brain on similar structures.

From this way of reasoning we would infer that delirium is the result of the blocking of impulses from the cells which regulate or control the centres which are concerned in thought and in executing movements. In describing the effects of alcohol it was pointed out that it also acted in blocking nerve impulses. This would suggest that in the later stages of alcoholism, whether resulting in a profound sleep or in noisy

delirium, other neurones are affected in the same way. This seemingly conflicting effect, when a drug leads to an increased activity of one organ and a decreased activity of other organs, is not uncommon. The action of digitalis, for instance, undoubtedly leads in some cases to a decrease in the pulse-rate, while at the same time it may increase the susceptibility of the vomiting centre. It is commonly assumed that the main action of the drug is upon the heart, whereas it acts far more frequently upon the vomiting centre. In people with healthy hearts digitalis has little or no effect, but in most people it produces nausea and vomiting. It is chiefly in diseased hearts, as in auricular flutter and fibrillation, that its effect is predominantly cardiac, and that for a reason which does not concern us here.

Such a drug as digitalis has other effects than vomiting and decreasing the heart, but they are not always perceptible. Diarrhœa may result. Mental disturbances of a slight degree are not uncommon, though occasionally they are very striking. A young woman with mitral stenosis was curiously susceptible to digitalis, partial heart-block being readily produced. One day, while under the influence of the drug and engaged in her household duties, she suddenly lost all consciousness of her surroundings and found herself sitting sobbing and crying at the fireside of a sister a mile away from her home. How she came there she did not know. An hour previously she had walked in and sat down and would not reply to her sister's inquiries. Toxins of disease act in a similar way. A man while recovering from an influenza was occasionally seized with attacks of noisy delirium; during the attack the pulse was slow and irregular, due to partial heart-block—of the kind produced by digitalis. After a few weeks the attacks ceased and neither heart nor brain symptoms of any kind were afterwards manifested.

Not only delirium but temporary insanity occurs after an influenzal attack; some people readily become delirious with a slight febrile attack. Insanity from toxic causes, as during the puerperium, or during a *Bacillus coli* infection, is not uncommon. It is worth considering how far the disturbances that lead to delirium and insanity are related to the disturbances that produce the symptoms of disease in other organs.

13. THE ACTION OF CHLOROFORM.

The inquiry into the nature of symptoms and the phenomena of ill-health has shown that problems in medicine can be approached in different ways, each of which throws a new light upon the subject. In this way principles emerge whose application helps the solution of problems. Many years ago, in a discussion, the late James Ross threw out the suggestion that there was a tendency for disease to affect the latest developed structures. We dimly perceive that this idea may explain a goodly number of the phenomena of ill-health if we knew how to apply it. I have attempted to apply the conception to discover the action of drugs, and studied it particularly in the action of chloroform. When Ross propounded this idea over 35 years ago, I was devoting much time trying to find out the parts of the nervous system concerned in the production of pain. At that time the researches of Gaskell on the sympathetic system were beginning to be applied, particularly by Ross, to the interpretation of symptoms, and as a result of a great many observations I put forward the view that of the two great divisions of the nervous system—the cerebro-spinal and the sympathetic (now called by Langley the autonomic and including the sympathetic and para-sympathetic)—pain was an attribute of the cerebro-spinal system. In this view the cerebro-spinal system and the "sympathetic" were closely allied, so that when pain did arise from visceral stimulation it was by impulses conveyed by the afferent sympathetic nerve to the cerebro-spinal system, just as impulses from the viscera caused contraction of the voluntary muscles seen in the hardening of the muscles of the abdominal wall in visceral diseases, and in the "organic reflexes."

I went further and suggested that of the two systems the sympathetic (controlling the "vegetative" functions) was the older, and was the representative of the nervous system in the invertebrates, while the cerebro-spinal was more recent and appeared first in the vertebrate animals. At this time embryologists and anatomists taught that the sympathetic was an outgrowth from the cerebro-spinal system, and therefore the more recently developed. The suggestion that the sympathetic system was the oldest was not accepted, but it is of interest to find that this suggestion is now receiving some support from embryologists.

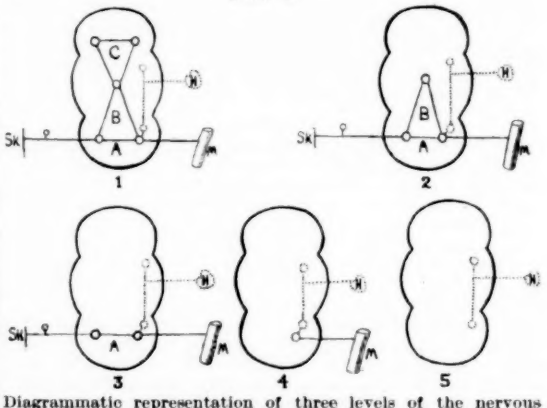
At that time I recognised that this was a matter which went to the root of symptomatology, and that no clear conception of pain and associated phenomena (such as cutaneous hyperalgesia, muscle contraction, nausea, and vomiting, &c.) could be obtained until the question was settled. I therefore sought for other evidences in the effects of diseases and of drugs. The study of the effects of chloroform seemed to my mind to be if not conclusive at all events strongly confirmatory of the view that the autonomic system is the more archaic.

The assumption is that the drug affects in order the nerve cells according to their development, the latest developed being first affected. In this way the whole cerebro-spinal system of nerves is put out of action (paralysed). Organic reflexes are assumed to arise in the autonomic system, and to be expressed (in part at least) through the cerebro-spinal, so far as the action of voluntary muscles are concerned, as in respiration, defæcation, micturition, &c.

In the diagram Fig. 9 an attempt to depict the effects of chloroform is given. The matter is represented in a broad fashion, for I am too ignorant of the constitution of the nervous system to describe the details. This description is based upon well-recognised facts and is an attempt to explain them.

Three levels of the cerebro-spinal system are represented in the diagram Fig. 9 (1). The lower

FIG. 9.



Diagrammatic representation of three levels of the nervous system showing the effects of chloroform on voluntary muscle. Muscle contraction can result from three levels of the cerebro-spinal nervous system and from the autonomic nervous system, represented by the interrupted lines. Chloroform acts by blocking impulses to the muscle first from the highest level C., next from the mid-level B, and then from the lowest level—the cutaneous reflex at A. After these are thrown out of action impulses from the autonomic system and the respiratory centre continue to excite the muscles, till finally with the blocking of impulses from this latter source respiration ceases and the heart (H) gradually ceases to beat.

level (A) representing a simple reflex, the part SK represents the sensory system of the external body wall, while M represents the voluntary muscular system in whole or in part. The second level (B) represents the portion of the brain where movements are coördinated, the higher level (C) represents the portion of the brain concerned in consciousness. The dotted portion represents the autonomic system of nerves concerned in the organic reflex of respiration and in regulating the heart.

On the administration of chloroform the higher centre (C) is the first to be affected (Fig. 9 (2)). The patient is unconscious but capable of muscular movement, and is often delirious because the portion C becomes partially blotted out. A further stage of chloroform anæsthesia represents the middle level gone (Fig. 9 (3)), when the patient lies in a seemingly profound sleep, but reflex contraction of the muscle occurs when the conjunctiva is stimulated. Movements are also provoked if a knife cuts the skin. At this stage the voluntary muscles concerned in the respiratory movements are acting. The next stage shows the abolition of the cutaneous reflex, the stage at which operations can be undertaken (Fig. 9 (4)). The only movements of the voluntary muscles now are those of respiration. The contracted abdominal muscles, the result of visceral disease, if present, are still unrelaxed, and may remain so even when the anæsthesia is profound—that is to say, impulses reaching the abdominal muscles from the viscera are unaffected by the chloroform. The next stage is when the voluntary muscles cease to act and respiration stops, on account of the blocking of impulses to the motor nerves in some part of the respiratory reflex arc (Fig. 9 (5)). Following upon cessation of breathing the heart gradually ceases to beat and death results.

Such is briefly the course of events in the anæsthesia of a healthy individual. The occurrence of death under chloroform, when not due to a cessation of respiration, is due to the disturbance of certain processes in the heart itself, which renders them more susceptible to the drug. How dependent the heart is for its action on a suitable supply of (aerated) blood is shown by the following experience. While feeling the pulse of a patient being operated upon it was found to become slow, and on looking at the patient it was evident that although he was making the movements of respiration, no air was entering the lungs because the tongue had fallen back. Opportunity was taken to watch this effect when the pulse steadily fell from 60 beats per minute to under 20 beats per minute, when the patient had suddenly a slight epileptic attack. The fall in pulse-rate was due probably to vagus inhibition by asphyxia blood acting on vagus centre. When the tongue was pulled forward the patient breathed deeply and the heart's rate became at once increased to 70 beats per minute.

It is to be observed from the foregoing description of Fig. 9 that the inactivity of the voluntary muscles was due to the blocking of impulses, first from the centre of consciousness, then from the second level, then from the periphery, and finally from the centre of respiration. In Fig. 3 it was shown that a voluntary muscle could be made to contract by impulses from four different sources. It will be seen that chloroform in turn blocks these impulses or "paralyses" the nerves from these sources.

This description of chloroform effect is given mainly to indicate certain lines which can be pursued in different spheres of medical research, not only in elucidating the nature of symptoms and the action of remedies, but also in solving the problems of development.

DONATIONS AND BEQUESTS.—By the will of the late Mr. Frederick Wolfe, retired solicitor, the testator left £2000 to the Middlesex Hospital, as to one-half for the Endowment Fund and one-half for the Cancer Research Fund, and £1000 each to the Charing Cross Hospital for the Endowment Fund and to King Edward's Hospital Fund for the Endowment Fund, as well as £500 each to the Cancer Hospital, Fulham-road, and the National Hospital for the Paralysed and Epileptic. Several hospitals to which the testator had been an annual subscriber will receive £100 each, and subject to certain bequests the residue of the property will be divided between the Charing Cross Hospital and the Middlesex Hospital for the Endowment Fund, and the Cancer Research Fund respectively.—During the past month the Manchester Royal Infirmary received two legacies: £1000 from the late Rev. John Jones Dixon and £200 from the late James Reece. Amongst the donations and subscriptions were £1250 from the Manchester and Salford meat trades, and from other trades and societies sums totalling £585.

SOME ASPECTS OF THE TYPHUS PROBLEM IN SOUTH AFRICA.

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TYPHUS is very prevalent in South Africa, mostly amongst natives, more than 8000 cases a year being notified. As full notification is impossible under primitive conditions, this number probably means 24,000 actual cases. About 300 cases a year occur in whites, but these are accidental infections from natives.

Difficulty of Diagnosis.

Typhus has probably occurred in South Africa since the earliest times. The natives are familiar with the disease and, as their habit is, pick out a salient feature for naming purposes. I-Fiva-Myama means literally the black-tongued fever, referring, of course, to the pronounced typhoid state which so readily develops. Only in the last few years has "black fever" been identified with typhus. Mitchell, Cranke, and Rees, the last of whom must be added to the long list of those who have lost their lives in typhus investigation, were the first to realise the identity of the two diseases. Only now is typhus coming into moderate prominence. The presence in a native district of a 14-day fever about which the local practitioner is unable to make up his mind is very suggestive of typhus. Such inability to make up the mind does not indicate a lack of diagnostic acuity; the raw native does not usually send for the European doctor, and if he does, one visit does not furnish all the clinical evidence necessary for an exact diagnosis. This is especially so as typhus in South African natives in no way conforms to the classical description of the malignant and terrifying type known to the older generation of European practitioners. Perhaps the most important difference is that the rash is not seen on the dark skins of the primitive native races. In speaking to Dr. Jacottet, of Matatiele, who was in Serbia during the epidemic, he told me that if it were not for the absence of the rash he would have readily diagnosed the 14-day fever prevalent in his district as typhus.

Mildness of South African Typhus.

Another difference is that the South African type is a comparatively mild one. Reliable statistics are impossible to obtain; my impressions are derived from the opportunities I have had in the past two years of observing innumerable cases both in hospital and in their own rural setting. For these opportunities I have to thank my chief, Dr. J. A. Mitchell, whose name I have already mentioned in connexion with pioneer work in the recognition of South African typhus. Certainly typical cases exist, especially amongst middle-aged people; these have sudden onset with pain in the neck and body, high temperature, rapidly developing fever, prostration, red eyes, stupid face, dry brown tongue, delirium, deafness, absence of knee-jerks, and death from the eighth to the twelfth day. In such cases blood-stained purple spots or even plaques may be visible in spite of the darkness of the skin. Small hæmorrhages may occur apart from the spots giving rise to a flea-bitten appearance. But associated with such cases are others of a much milder type dwindling down to a few days' pyrexia with a few added symptoms. I have not yet had the opportunity of confirming Jacquot's observation of "typhusisation" in subjects exposed to infection taking the form of malaise, slight fever, loss of appetite, headache, and intellectual debility for several weeks.

In white or light-skinned people the rash is prominent, varying from transient macules which fade on pressure, through brown-stained spots which do not so readily fade, to distinct blood-stained spots. The milder the case the less the rash. The shading of spots showing deep in the skin is spoken of as

subcuticular mottling. A certain amount of bronchial catarrh is not uncommon, but the broncho-pneumonia which is such a marked feature of European typhus is only rarely seen.

Distribution of Population.

In South Africa one has to deal with large native areas on the one hand, and rural and urban mixed areas on the other. In urban areas the means exist for enforcing cleanliness and actively suppressing the disease; in mixed farming areas the natives are greatly under the influence of the whites as regards health, and in the large native areas such health influence is absent. Of these native areas the Transkei is typical; here a large portion of the Eastern Cape is divided into 27 districts, having a total population of over a million natives. In each district is a magistrate and a part-time district surgeon; round each magistracy springs up a little European village. In a district with a native population of 30,000 there may be 20 or more local areas, each under the control of a native headman; a headman's area (called a location) has a very scattered native population. A kraal, the habitation of one family, consists of several huts and a neighbouring rough enclosure for a few stock, sheep, or goats that the family is lucky enough to own. Kraals are often aggregated into scattered villages. Topographically, the country varies from undulating veld to rugged mountain areas. A few roads are supplemented by rough tracks which dwindle into paths; except on the roads wheeled transport is impossible. The natives use a very crude form of small sledge drawn by oxen, but many places are only accessible on horseback.

Such a native area soon becomes a nest of typhus and other diseases. Suppression of typhus in such an area presents the greatest difficulty.

Social Conditions of Natives.

The habits and social conditions of the natives are such as completely to nullify the advantages of living in sunshine and vast open spaces. In an isolated kraal consisting of five round mud huts, each without any ventilation or lighting except a small door, one may find at night 10 or 15 persons closely shut in, lying on the floor, each completely enveloped in a kaffir blanket. Native custom requires unlimited hospitality. Interchange of lice under such conditions is unavoidable. Nor would the presence of a typhus case or convalescent alter the customs of the house. A fundamental difficulty of dealing with typhus in natives is their ignorance of the infectiousness of disease. Witchcraft and malign influences they believe in, but disease germs and their transmission from one to another are to them inconceivable.

Knowing as we now do that typhus can be communicated from person to person by the louse alone, the suppression of typhus becomes a matter of enforcing cleanliness. Amelioration of a native's social conditions must necessarily be a long process; increased agricultural productivity may in time to come enable him to produce not only enough for his own bare existence, but a surplus which will give him prosperity and the luxury of cleanliness. It may not be literally true that the first act of the Pilgrim Fathers was to fall on their knees and the next to fall on the aborigines, but their advent marked the introduction of conditions most deadly to the aboriginal races. Tuberculosis takes terrible toll of uncivilised man brought into contact with those who have enjoyed the advantages of urban civilisation. The wearing of European clothes without opportunities for cleanliness tends to give the louse unlimited scope. The red ochre and fat with which the raw native anoints himself are inimical to lice, and the loose blanket which can be thrown off and laid in the sun is not an ideal home for them, having neither folds, seams, nor cosy corners. Generally speaking, however, all natives are lousy, in the head if not in the body. Old people are the worst; an old native woman long past sex interest is a neglected figure. The difficulties of personal cleanliness in rural natives are not realised. One set of dilapidated clothes worn continuously, the nearest washing water some miles away, the weather sometimes very cold, no soap and no money to buy any—these factors indicate some of the difficulties. The native now moves wider afield both for livelihood and amusement, with corresponding effect on the epidemiology of typhus and other infectious disease. One may say he is in process of Europeanisation and urbanisation, of which neither is an unmixed blessing.

To attain a standard of cleanliness which will eliminate typhus may be realised in the dim future. meanwhile, urgency measures are required. If you tell a native that the louse is the cause of typhus he laughs at you. He well knows that the louse has been the constant companion of himself and his ancestors; moreover, the statement would not be true, for the *infected* louse is responsible. The immediate problem, then, is to get rid, not of the louse, but of the infected louse. For this three things are necessary: First, to find the cases; the second, a portable rapid disinfestor; and the third, a reliable insecticide which will be attractive to natives. Scouts to find the cases are easily found and trained.

De-verminisation Apparatus.

To work out a portable, rapid, and efficient de-verminising apparatus has been more difficult. Water and fuel are often unobtainable. Any process which wets the clothes is too slow for practical purposes and raises intense objections. All schemes for general de-verminisation are too costly. Natives are only amenable when frightened by actual contact with the disease; like all savages, they lack foresight. The difficulty has been solved by the use of a canvas cover placed over a collapsible wood frame, into which hot air from a large blow-lamp is introduced through a short length of light iron pipe. The hot air is distributed and danger of fire is avoided by the use of a perforated galvanised iron baffle. The temperature is regulated by a Centigrade thermometer slipped into a wooden guide let into the top of the tent. The whole apparatus with the pack-saddle on which it is carried weighs about 116 lb. The tent is 4 ft. 7 in. high, 4 ft. 4 in. by 3 ft. 3 in. long and wide, and of stout canvas. The sides are prolonged into 4-inch flaps which rest on the ground and may be weighted with stones, earth, or other material. The frame is of wood, the uprights about 4 ft. 11 in. in height, being pointed for driving into the ground. The sidepieces, two long and two short, corresponding to the dimensions of the tent, are joined to the tops of the uprights by detachable three-way angle-pieces made out of 3-inch lengths of light but strong metal tubes acetylene-welded together. To prevent the tent catching fire over the hot-air pipe, an oblong piece of asbestos cloth, the lower edge of which touches the ground when the tent is in position, is inserted midway in one of the long sides. The pipe is of black iron acetylene-welded. The baffle consists of a perforated plate of light galvanised iron 2 ft. 1 in. wide and 3 ft. long; 6 in. of the length, bent at right angles, raises one end from the ground. The unbent edge rests over the inner end of the pipe but raised level by a couple of loose stones. The plate, including its bent end, is perforated by closely set holes 1 inch in diameter, except for a narrowing area 16 in. wide and 12 in. long, where the hottest part of the draught enters. The best blow-lamp is made by Christopher Collins, Ltd., St. Paul's-square, Birmingham. No. 100.

The gallon-sized "Corona" lamp made by Messrs. Howes and Burley is satisfactory; other lamps have proved disappointing. The six cross-pieces, on which to hang the clothing, are light but strong, preferably of bamboo; they are lashed with a continuous length of thin rope on the upper surface of the long sides of the frame. Stiff wire double-hooked loops are passed over the bamboo crossbars, four to each, for smaller garments. The best pack-saddle is the G.S. military pattern.

To work the disinfestor first set up the frame. Dig a channel for the pipe to enter under the asbestos insertion (to save the asbestos from the wear which takes place if the pipe is simply placed on the ground and the asbestos cut snugly to fit it). Clear enough earth from the inner end of the pipe to allow free access of air under the baffle. Dig a hole outside the tent deep enough to bring the flame of the blow-lamp opposite the pipe. Place the baffle-plate in even position as described. Clothing must hang over the bamboos or on the hooks *so as to leave a clear space between each row*, and no clothing must hang over the frame. If these points are not carefully attended to the heat distribution will be uneven, the disinfestation patchy, and the thermometer may not indicate the actual heat in places, so

that there may be scorching. Clothing should, of course, hang well clear of the baffle.

Cover the loaded frame with the tent. Place the lighted blow-lamp in the pit so that the whole flame enters the pipe. Place the thermometer in position. Take the time when the thermometer registers 75° C. Twenty minutes of this temperature will kill lice and eggs. By working from 85° C.–90° C. the time can be shortened. When dealing with skins and leather 85° C. should be the maximum. It is useless to disinfest damp clothing, as the heat is all used up in drying. Watch the temperature and regulate by the cock on the blow-lamp. The burner of the lamp must be replaced by a more substantial one consisting of an iron ring with radially projecting internal pieces welded into position. The rings I am actually using are of 5/16th in. iron, 2 in. in diameter, with four projecting pieces of material somewhat thinner than the ring. The last requirement was a reliable insecticide which would be attractive to the natives. Nuttall, in *Parasitology*, Vol. X., No. 4, gives an exhaustive account of the action of most known insecticides, and I am familiar with his work. Previous to my own experiments paraffin had been relied on in an emulsion with soap. I found its insecticidal qualities disappointing; probably the pure paraffin one uses for burning is not so potent as crude kerosene. Not only was its action disappointing, but the natives did not like it.

To make a long story short, I found that a saturated solution of naphthalene in nut oil (about 1 in 8) was an efficient insecticide. Any oil will do, but the cheapest, as far as I know, is nut oil. This is now used to disinfest the head and body while the clothes are passing through the machine. Naphthalene oil is very attractive to the natives; strangely enough it has no objectionable smell, and it has a beneficial effect on scabies to which the natives are very prone. As far as my experience goes, naphthalene oil kills lice and nits on the hair of head and body. A gallon is sufficient for about 250 persons. The head acts as a sponge from which the body, specially the hairy parts, can be anointed when suitable opportunity arises.

The apparatus is a gradual evolution. Dr. J. A. Mitchell, the Secretary for Public Health; Dr. Park Ross, and myself of the Union Health Department, and Mr. Harries, of the magisterial staff have all participated in its development. Good experimental results have been obtained in Mr. Harries's district of 25,000 population, but reinfection readily takes place from surrounding districts. A campaign is now, however, being organised on a large scale, one apparatus in each district. To work the apparatus a white man is required with two native assistants. All are mounted, so the gang and apparatus are very mobile. Cases are found by the scouts in front, and the gang follows and rapidly de-verminises. Under old methods the natives concealed the disease. They had little incentive for reporting it, at the best a very unpleasant boiling and spoiling of their clothes, restriction of their movements, and no helpful treatment. The introduction of the rapid hot-air and naphthalene-oil method has changed all this. Far from concealing the disease, they now clamour for attention, and it is to be hoped that the scouts may be dispensed with in the near future.

As regards treatment, the native has a peculiar objection to drinking water when sick. If by advice this objection could be removed one would be going far towards mitigating the disease. The advice is always given, but I fear not always acted on.

ADDITIONAL NOTES ON THE IMMUNISING FUNCTION OF THE SUB-EPITHELIAL LYMPHATIC GLANDS.

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IN a series of papers from 1911 to 1917,[1] I developed the thesis that the tonsils, Peyer's patches, solitary lymph glands, and the vermiform appendix should be grouped together as the subepithelial lymphatic glands; that they were continually ingesting the adjacent bacteria in the nasal and alimentary channels by a process to which I gave the name phagotaxis; and that in all probability by this mechanism these subepithelial lymphatic glands were constantly immunising the body against various infections. In a book published in 1919[2] the available evidence was collected. Circumstances have prevented the carrying out of further direct experimentation. A few observations additional to those recorded in 1919 are, however, perhaps worth making.

First Suggestion of an Immunising Function for the Tonsil.

In 1919 I was unaware that the production of immunity had been definitely suggested as a function of any of the subepithelial lymphatic glands before 1911. R. H. Good, of Chicago, I now find from a reference given by Barnes,[3] wrote an article[4] in 1909 on Early Immunisation, the Essential Function of the Tonsil. Good, however, though aware of the passage of inert particles through the epithelium, believed that bacteria themselves did not pass. He therefore assumed that bacteria growing in the crypts of the tonsils produced their toxins which passed into the lymphoid tissue of the tonsil and provoked an immunising response. When sufficient opsonins had been formed the phagocytes emigrated into the crypts and attacked the bacteria, and the resulting mass was large enough to be squeezed out of the crypts and got rid of during the movements of swallowing. The words "lymph" and "vaccines" in Good's paper do not appear to be employed with their usual present meaning. There can be no doubt now that the lymphocytes of all the subepithelial lymphatic glands, including the tonsil, are continually throughout life emigrating through the overlying epithelium, engulfing bacteria, and returning through the epithelium into the lymphoid tissue, which is constantly crowded with bacteria in health. The theory of immunisation by the tonsils is thus in a far stronger position than was believed by Good.

Alimentary Immunisation.

That immunity against bacillary dysentery and Malta fever can be obtained by the oral administration of cultures has been shown by Nicolle and Conseil[5]; and work previous to 1919 on similar immunisation against typhoid fever has been repeatedly confirmed of late years.[6] Dead or living bacteria administered by the mouth will be taken up in large numbers by the lymphoid tissue of the tonsils, Peyer's patches, solitary glands, and vermiform appendix by the process of phagotaxis. And the further proof that has accumulated since 1919 of the successful vaccination by oral administration in various diseases is in support of the immunising function of the subepithelial lymphatic glands.

Healthily-acquired Immunity.

The recent brilliant researches of Dudley[7] have now supplied proof that mere exposure to diphtheritic infection without in any way suffering from the disease leads to the acquirement of immunity against the virus as shown by the Schick test. The virus almost certainly reaches the "contact" through the nose (directly or via the conjunctiva and lacrymo-nasal duct) or through the mouth. It is known that various mechanisms facilitate the rapid passage of the micro-organisms towards the naso-pharyngeal and faucial tonsils; and that when there they are engulfed by lymphocytes and carried wholesale into the lymphoid tissue in these glands. The conclusion is irresistible that these organs are concerned in this production of healthily-acquired immunity.

Further Work Indicated.

It is very desirable that researches on the lines initiated by Dudley should be carried out, to observe whether the acquirement of a Schick-negative reaction by exposure to diphtheritic infection is affected by previous complete tonsillectomy, both naso-pharyngeal and faucial. It would also be invaluable to know whether the morbidity and mortality rates of pre-

viously Schick-positive reactors on exposure to diphtheritic infection is influenced by previous complete naso-pharyngeal and faucial tonsillectomies. Indeed, the whole question of the response of the child deprived of most of its circum-pharyngeal ring of lymphoid tissue to the exanthemata would be a most useful subject for study in fever hospitals. Experimental work to test the vaccination power of the rabbit's appendix is contemplated, and this may also throw light on the work of the subepithelial lymphatic glands.

Evidence of Disease of Tonsils and Appendix.

But while there is room for much further investigation, it is, nevertheless, claimed that sufficient evidence has accumulated to call for the provisional acceptance of the view that the subepithelial lymphatic glands are the natural immunising organs of the body. This view is not popular, some surgeons regarding it as a reflection upon their work in removing tonsils and appendices. To admit that an organ has a useful function, however, does not imply that it should never be removed when it is the site of disease. The very function of vaccinating against infections renders the tonsils and appendix unusually liable to fierce assaults. The admission of a useful function does, however, demand that an organ should not be excised without adequate cause. The old fallacy that the human appendix is a vestigial relic was surely overthrown in 1919 by a study of the comparative anatomy and embryology[2]; yet it still continues to be taught and acted upon. Recently I saw a distinguished surgeon operate upon a woman of 25 for a ruptured extra-uterine gestation. After dealing most skilfully with the trouble he proceeded to remove a normal appendix. There was no history of appendicular trouble, but the surgeon justified himself by saying that appendicitis was a common and dangerous disease and without an appendix appendicitis was impossible. An acceptance of the theory of the immunising action of the appendix would positively contra-indicate such procedure.

Clinical indications for appendicectomy should be critically studied. In our present state of knowledge it may be worth while sometimes to remove the appendix as a remotely possible source of infection in some chronic systemic disease, but the culpability of the appendix is not at present proven. Appendicectomy for such conditions as epilepsy should be condemned. The diagnosis of chronic appendicitis for vague right-sided abdominal pain certainly requires searching analysis. As Haggard wrote in a recent editorial, "Chronic appendicitis is so easy to say and means so little. . . . We have little reason for diagnosing chronic appendicitis in the absence of acute or subacute attacks."[8] The diagnosis of chronic appendicitis has been strongly attacked by Hamilton Whiteford.[9]

Indications for Removal.

Again, if the tonsils have a useful function it is necessary to scrutinise critically the evidence that they are diseased before we remove them. Tonsils are removed either because of local lesions or on account of trouble elsewhere. With regard to local lesions moderate enlargement in childhood is no sign of disease. Enlargement of the naso-pharyngeal tonsil, however, may obstruct nasal respiration with serious consequences, and when it does so it always demands treatment. That whitish matter containing bacteria and phagocytes can be squeezed from the crypts cannot be accepted as a valid criterion of morbidity. Carruthers [10] has pointed out that such fluid can be squeezed out of the tonsils of healthy sheep and suggests that such fluid should be called "physiological pus." Certain it is that every healthy tonsillar crypt contains both phagocytes and bacteria.

Enlargement of glands in the upper part of the neck have doubtless often received their infection via the faucial tonsils; yet Kaiser[11] in his Effects of Tonsillectomy on the General Health of Five Thousand Children, states that whilst before operation 43 per cent. either had enlarged cervical glands or a history of enlarged glands, one year after operation 42 per cent. suffered from enlarged glands in the neck; for though some of the original enlargements had subsided, an additional 22 per cent. of the children had enlargement of glands previously normal.

With regard to systemic infections it is not sufficient to know that the virus entered by way of the tonsils. Whether infection takes place or not depends in large measure on the virulence and number of the organisms, and if invasion is to take place it is probably less serious via the tonsils than any other way. We must have reason for thinking that the tonsil has become a chronic focus from which reinvasion of the body is frequently occurring. There is some presumptive evidence that the tonsils may at times assume this rôle. And in selected cases it has been justifiable to enucleate the tonsils as a speculative operation in such chronic diseases as rheumatic fever and arthritis deformans. But the after-histories must be investigated with scrupulous care, and routine tonsillectomy for such conditions cannot be universally recommended till the statistical evidence is conclusive. Sluder, who writes temperately on the subject, gives a list of some 70 conditions outside the tonsil, for which, rightly or wrongly, tonsillectomy has been practised,[12] and others may be added. For such varied complaints as chronic skin disease, asthma, nephritis, goitre, muscular rheumatism, iridocyclitis, and epithelioma of the larynx has the tonsil been punished. Yet (if we exclude the undoubtedly serious effects of nasal obstruction due to enlarged naso-pharyngeal tonsil) of what lesion remote from the tonsils can it be said that the beneficial effects of tonsillectomy have been soundly established on a scientific basis? In the case of rheumatic fever and its manifestations the balance of evidence appears to incline against tonsillectomy.

Pathological Evidence.

If the clinical evidence of disease in the subepithelial lymphatic glands is sometimes unsatisfactory, the pathological evidence is not always above suspicion. A constant encounter is going on throughout life between bacteria and the lymphoid tissue of these glands. In consequence, the presence of intracellular bacteria in the lymph nodes and in the epithelium as well as on the surface, the collection of vast numbers of lymphocytes, and ultimately some degree of fibrosis are merely the expressions of the normal physiological activity. The presence of bacteria in a germinal centre without breach of the overlying epithelium, though accepted by Proetz,[12] is *not* evidence of follicular tonsillitis. One must also be sceptical of a histological report of chronic *interstitial* tonsillitis or appendicitis as evidence of disease, for these glands are normally in a condition indistinguishable from chronic low-grade inflammation. Ulcers of the epithelium or the presence of polymorphonuclear leucocytes are, however, good microscopical evidence of disease.

It is, however, not my object here to discuss the whole subject of the indications for operations on the subepithelial lymphatic glands. I wish to urge the probability of an immunising function for the tonsils and appendix, and in view of such probability to press for closer examination of some of the indications for operation.

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FOUR CASES OF MASTOID DISEASE.

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THE following case was diagnosed as one of acute mastoiditis, causing a septic meningitis.

CASE 1.—Female, aged 59, admitted on March 28th, 1922, in a comatose condition.

History.—Her husband stated that for 30 years she had been deaf in her left ear. On March 23rd, 1922, she complained of pain in her left ear, and on the following day there was a small amount of blood-stained thin fluid. Hot fomentations were applied, and the pain disappeared, whilst the accompanying vomiting ceased. On the 27th she felt practically well again, but at 10 o'clock that night the pain began again in her ear and also in the occipital region. On the afternoon of the 28th she became unconscious.

Condition on Admission.—There appeared to be some induration over the left mastoid process and pus was found in the meatus. No tympanic membrane was to be seen; the right ear was normal, pupils reacted to light and were equal, discs showed presence of optic neuritis. Reflexes: Knee-jerks present on right, not on left, and there was a right plantar extensor movement. She was markedly spastic on the right side, but her left side appeared normal. Her other systems appeared normal on examination. Pulse, 120; temp., 102° F.; resp., 30.

Diagnosis.—Mastoid disease, ? meningitis, ? cerebral abscess.

Operation.—Left mastoid explored and much pus found in antrum, with soft unhealthy bone separating antrum from middle cranial fossa. Lateral sinus normal, but lying well forward, partially encroaching on mastoid antrum. Bone destruction went at least 1½ inches behind sinus. The middle fossa dura was bulging and was not pulsating; there was also granulation tissue on it. Dura painted with pure carbolic acid and incised; temporo-sphenoidal lobe explored, but no pus discovered. Dura was then closed and repainted with pure carbolic, and wound was closed, drainage being left at the lower angle. By lumbar puncture turbid cerebro-spinal fluid under pressure was obtained. Bacteriological report of cerebro-spinal fluid stated, "An organism resembling pneumococcus was seen in direct film, but no growth on culture after 72 hours' incubation at 37° C." The swab taken from the pus from the antrum grew *Streptococcus longus.* The patient died the same night, never having regained consciousness. Before death she had Cheyne-Stokes respiration, and repeatedly vomited a darkish-coloured fluid.

Post-mortem Examination.—Granulations on dura in neighbourhood of wound. Meningitis well-marked, especially over vertex and Sylvian fissures of brain, with a greenish-coloured pus. Ventricles dilated. No other abnormality.

The next case was one of chronic mastoiditis and tuberculous meningitis.

CASE 2.—Male, aged 16, admitted March 29th, 1922, for meningitis. No history obtainable either from patient or his parents.

Condition on Admission.—Pulse, 60; temp., 98° F.; resp., 20. There was ? some tenderness over left mastoid and signs of discharge from left ear. Patient very irritable and examination extremely difficult. As far as could be made out there was no other abnormality. Strongly positive Kernig's sign, knee-jerks present, plantar reflexes flexor. An anæsthetic was given for purposes of examination; urine normal on analysis was then obtained, lumbar puncture gave a clear fluid under pressure, and on examination of the ears a bulging drumhead was found with a very small perforation through which a little pus was oozing. A myringotomy was then performed and much pus was obtained.

Diagnosis.—Acute mastoiditis associated with meningitis.

Operation.—The mastoid was opened and large quantities of pus and granulation tissue were found everywhere. Sinus normal; no granulations on mid fossa or posterior fossa dura, although the former was bulging.

On March 30th the boy was much better and could speak rationally, although the latent period was long. The report on the cerebro-spinal fluid was: "White cells, 183 per c.mm.; both polymorphs and lymphocytes present. Protein, 0·18 per cent. Sugar absent. Suggests tuberculous meningitis as opposed to septic."

The boy's history was also now available: 14 days before admission he had returned home suffering from headache and vomiting, went to bed, and remained there till admission. Everything eaten was vomited and he complained of violent abdominal pain. On the 23rd he became delirious and had been so more or less till admission. From this one would have diagnosed a meningitis rather than an acute mastoid. The cerebro-spinal fluid analysis bore this out and suggested it to be of tuberculous type.

On April 1st the patient was comatose and lumbar puncture gave clear fluid under pressure. Bacteriological examination of this showed that "on direct examination there was an excess of lymphocytes and some blood. No micro-organism was detected, and culture remained sterile." On the 3rd patient was more comatose, pupils now widely dilated; examination of fundus of his eye showed "choked disc" with ? tuberculous nodules on the choroid (especially nasal side). Lumbar puncture gave fluid with roughly the same analysis as before; also there was a low percentage chloride. He died at 11 P.M. with a pulse of 160, temp. 102°, resp. 40 just before death.

Post-mortem Examination.—No evidence of direct spread of sepsis to brain from mastoid antrum. Lateral sinus on the side of operation not thrombosed. Membranes over base of brain more opaque, a gelatinous substance filling the interpeduncular space. Ventricles dilated. Large caseating gland at bifurcation of trachea. Miliary tubercles seen over both lobes of left lung. Small tuberculous glands bulging in wall of pulmonary artery. Branches of pulmonary vessels of left upper lobe found to pass through caseating areas in the lung. Right lung on section showed no tuberculous foci. Bacteriological examination of fluid from interpeduncular fossa showed presence of a few tubercle bacilli.

The third case was one of cerebral abscess following on mastoiditis.

CASE 3.—Male, aged 45, admitted on March 31st, 1922, for pains in the head, otorrhœa, and drowsiness. Patient had had otorrhœa for years.

History of Present Disease.—March 21st he returned home from work complaining of pains in right side of head and right ear. On the 24th his ear bled, but did not ease his pain, as it had done on previous occasions. On the 28th his headache became much worse, and on the 30th he vomited several times.

Condition on Admission.—Patient very drowsy, but answered questions. Lay on his right side, occasionally trying to get up out of bed. Headache right-sided only. Ear: Absence of drum and ossicles; a foul discharge present; there was no mastoid tenderness. Neck rigid, pupils reacted to light and were equal; no abnormality of ocular movements, no cranial-nerve lesion demonstrable; flexor plantar reflexes, abdominal reflexes present, hands gripped equally. Other systems normal.

Diagnosis.—? Cerebral abscess.

Operation.—Right mastoid was opened and pus under pressure evacuated. Lateral sinus normal, but granulations on dura of middle fossa; dura also thickened. Incision made into dura and temporo-sphenoidal lobe explored, but no pus obtained. Mastoid drained.

On April 1st patient much better and more normal mentally; headache much better. Sugar in urine; lumbar puncture showed a cloudy fluid. On analysis polymorphs were in large excess. Protein was 0·18 per cent. No reduction of Fehling's solution. Patient died half hour after lumbar puncture.

Post-mortem Examination.—Lungs full of blood and break down readily. Atheroma of abdominal aorta. Liver mottled. Kidneys granular. Brain shows good cerebellar cone; an abscess in right temporo-sphenoidal lobe. Meningitis at base, with a thick adherent opaque membrane.

The fourth case was one of acute mastoiditis, septicæmia, infective endocarditis, and cerebral embolus.

CASE 4.—Male, aged 6, admitted on April 6th, 1922, for drowsiness.

Previous History.—Patient had always been weak; tonsils removed 15 months before for sepsis.

History of Present Disease.—Three weeks before (March 14th) patient complained of pains in head. Both ears (particularly left) a few hours later began to discharge a thick yellow pus. He gradually became much worse. On the 21st he had a 15 minutes' shivering attack and looked cold and blue. On the 28th he had another similar attack. On April 3rd his ears both stopped discharging, and patient did not like to be disturbed.

Condition on Admission.—Patient drowsy, could not be roused. Eyes reacted a light, pupils equal. Right fundus showed reddening of disc; marked photophobia in left eye. Reflexes normal. There appeared to be tenderness over the left mastoid. There was a bilateral perforation of his tympanic membranes. Profuse discharge from left meatus. Pulse, 120; temp., 104·6° F.; resp., 40.

Diagnosis.—? Cerebral abscess following acute mastoiditis.

Operation.—Left mastoid opened and much necrosis of bone found; pus present, middle fossa dura and lateral sinus exposed; both normal in appearance, the sinus being free from granulations and pulsating. Wound drained. Nine hours after operation patient developed a right-sided hemiplegia affecting face, arm, and leg. Abdominal reflexes absent; a right extensor plantar reflex; patient more comatose.

Second Operation.—Patient was therefore re-operated on at once, and the wound was explored. Dura not now pulsating or bulging. An incision was made into the dura, and an excess of cerebro-spinal fluid was immediately evacuated. Temporo-sphenoidal lobe thoroughly well explored with an aspirating syringe, but no pus obtained. The next day, the 6th, patient's temperature rose to 106° and his pulse was not palpable. He died on the morning of the 7th. Pulse, ?; temp., 106·2°; resp., 62.

Post-mortem Examination.—Lungs showed patches of broncho-pneumonia. Heart showed presence of early vegetations on the mitral valve. Some petechial hæmorrhage on pericardium and on heart surface. Heart muscle pale and flabby. Staining of aorta and hæmorrhages in most organs. Brain macroscopically normal. No cerebral abscess.

Remarks.

These four cases seem to be of interest in that they exemplify conditions accompanying middle-ear disease fortunately rarely encountered. Cases 1 and 3 demonstrate that chronic otitis media, although causing trivial symptoms, may be potentially the most dangerous to life. Case 3 also shows that in spite of thorough exploration a temporo-sphenoidal abscess may be entirely missed and suggests that lumbar puncture in such a condition may lead to fatal results. The association of tuberculous meningitis coincident with mastoid disease, though rare, may give rise to great difficulty in diagnosis and treatment. Septicæmia is well recognised as a complication of acute mastoiditis.

A CASE OF ANAPHYLACTIC SHOCK DUE TO ALIMENTARY ABSORPTION.

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THE classical picture of anaphylactic shock, as seen in the guinea-pig, is described by Besredka as follows:—

"Scarcely is the test injection terminated than the animal begins to struggle; it scratches its muzzle as if wanting to remove a foreign body. Its struggles become more and more marked; it commences to turn round and round and then to turn somersaults, which become more and more frequent and violent. Then the convulsive attacks begin to take place at greater intervals, and the animal, having become weakened from the output of so much energy, lies on its side. The vesical and anal sphincters are relaxed; there is involuntary discharge of urine and fæces. The respiratory movements, dyspnœic at first, become slower and slower, and finally become paralysed."[1]

A case of anaphylaxis, resulting from the absorption of milk from the alimentary canal, which I met with recently, in practice, is here recorded owing to its unusual character.

A girl aged 5 years, who had always previously been healthy, became ill on March 5th, the mother having remarked that she passed some blood with the motions. She was not aware of the child having had an attack of diarrhœa. The patient had been somewhat feverish, but had not vomited. The diet consisted, as was usual in the family, of potatoes, eggs, milk, tea, and bread. I was called to see her on the 7th.

Condition on Examination.—I found no abdominal resistance. The tongue was dry and slightly coated. The temperature and respiration were normal and the pulse was 80. There was no disease of the heart or lungs. I restricted the diet to milk, and prescribed bismuth carbonate 10 gr. three times a day. This diet was strictly adhered to throughout.

Course of Case.—Three days after the adoption of this régime the child passed a round worm (*Ascaris lumbricoides*) and thereafter the mother noticed her getting worse. Two days later I received an urgent message to come and see the child as she was extremely ill. The mother stated that the child was constantly "fighting and scratching her nose, gasping and stretching herself and sighing," and that she was always "falling away" if she tried to sit or stand up. During the previous few days there had been diarrhœa with blood-stained motions. The patient complained of some abdominal pain. There was no vomiting, but nausea was evident. The tongue was dry and red, pulse 110, temperature normal. The pupils were dilated. These symptoms had reached their culmination on this day. The mother was anxious to have the child removed to hospital.

I persuaded her to keep the child at home and ordered the milk to be boiled before use. I ceased the administration of bismuth. A change came about very rapidly as a result of this alteration in treatment. On the following day, the 14th, the patient was able to rest quietly in bed. The gasping and sighing and restlessness had gone, but she still had blood-stained diarrhœa. On the 15th the improvement continued and the diarrhœa was less; on the 16th the tongue was only slightly furred, temperature normal, there was no abdominal pain or nasal irritation, and she was out of bed; diarrhœa had ceased.

A scarification test with raw milk on the arm gave a reaction in half an hour. On the evening of the 16th the child was again given a drink of uncooked milk, and again complained of the irritation in her nose. After two weeks' avoidance of fresh milk she was once more able to take it without untoward effect.

Remarks.

The results obtained by boiling the milk are not such as one would expect to find if the symptoms were due to protein sensitisation from milk, for Besredka states that the sensibiligen of milk is thermostable and will withstand a temperature of 100° or 120° C. and is thereby perceptibly diminished in its toxicity.[2] This case is of interest as illustrating the fact first stated by Richet at the International Medical Congress (1913) that "experimental alimentary anaphylaxis is difficult to bring about under conditions of healthy digestion, since it is a question of toxalbumins or nutritive albumins, either because the digestive juices actively intervene in transforming these albumins and rendering them innocuous, or because the individual is immunised against them." Now in this family of a mother and five children, varying in age from 1 to 7 years, the substances going to make up the diet were the same for all; the same milk was partaken of without any of the others manifesting gastric disturbance. But in the child whose case has been described a lesion having been caused in the intestinal mucous membrane by a worm, an area was left which was highly susceptible to the absorption of foreign protein, such as would be conveyed by milk.

Intolerance of a milk diet is not unusual,[3] but a train of symptoms so closely approximating to those of anaphylactic shock, and passing off after the lesion in the bowel wall has had time to heal, is, I believe, rare. One other possibility must be considered—viz., that the bowels in the presence of a disturbance were unable to carry the digestion of the milk to a suitable stage for its proper assimilation. The presence of an unusually permeable patch of bowel left the way open for the absorption of toxic products whose digestion was completed in the tissues.[4] Such a contingency is not so remote when one considers how frequently persons become supersensitive to certain proteins after intestinal operations. This hypersensitiveness may pass off in months or in years according as the individual realises his inability to assimilate the food in the same amounts as formerly.

It is worthy of note that the child has, since March, been quite healthy and free from any complaint, and has never since passed any worms, although treated with santonin. Practically all the children of this district (Wicklow) are infected with worms, but I have found none of them manifesting such a distinctive group of symptoms as this one.

[1] Besredka, A.: Anaphylaxis and Anti-Anaphylaxis (Trans. by S. Roodhouse Gloyne), 1919, p. 38.

[2] Ibid., p. 21.

[3] Moorhead, T. Gilman: Milk Anaphylaxis in Gastric Cases. Medical Press and Circular, Jan. 17th, 1923.

[4] Wells, H. G.: Chemical Pathology.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

CONSTIPATION FROM THE GENERAL PRACTITIONER'S POINT OF VIEW.

A MEETING of this Society was held at 11, Chandos-street, Cavendish-square, W., on NOV. 12th, Dr. HERBERT SPENCER in the chair.

Dr. H. DES VŒUX introduced a discussion on this subject. He spoke of the unhappy experience, no doubt common to all medical men, of being consulted by an old friend, who thought he wanted a pill, as his bowels were not acting easily and his appetite had gone off a little—a patient whose general aspect was good, in whom an ordinary examination showed nothing until a finger introduced into the rectum discovered a large and irremovable mass. He contrasted this experience with the almost pleasurable feeling produced when another friend came to say that he felt "very ill and all to pieces" and looked it, but on examination showed nothing but a loaded rectum, and perhaps a loaded colon, showing him to be merely suffering from the secondary effects of constipation amenable to a course of some laxative. This complacent exaltation was, however, unjustified, for no healthy friend of a practitioner ought to have been allowed to get into such a condition, at any rate if he had ever consulted the practitioner previously. This class of case, and others similar, were due to faulty medical teaching and would not be encountered so frequently had the consequences of bad habits been drilled into the minds of medical men when they were young. The profession should lay it down as a canon of sound and healthful existence that the bowels could and would act daily and naturally—that is, without medicament or extraneous help. There was too much of the attitude of mind of the physician who said when puzzled at a diagnosis, "Well, thank God we have the bowels to treat." When he was young it was taught that a daily evacuation was essential, and the unnatural corollary was that purgatives and laxatives were freely and thoughtlessly administered; this doctrine apparently still remained, though perhaps it had been slightly modified. It certainly existed still in the nursery, where tender infants were constantly dosed for any slight ailment; all were familiar with the parent who announced at the doctor's first visit, "Of course, I have given a dose of so-and-so." He often wished that the whole of this class of medicine could be scheduled amongst the dangerous drugs, for he felt convinced that in the long run more harm was produced by them than by morphia, cocaine, and the like. In practice about half the doctor's work was connected with the stomach and bowels; individual members of the profession had little power to prevent the occurrence of diseases of the heart and lungs, but they had ample means of preventing those of the stomach and bowels if they did but exercise them. The rectum and the bladder had much the same functions to perform under similar physiological management, but over the former came the interference of the conscious mind, while the latter was governed almost unconsciously. The reflex action of the bladder, however, could only be restrained for a short time, whereas the rectum could be controlled to suit convenience. The result was that the number of bladder trouble cases to be dealt with was infinitesimal compared with that of troubles of the bowel. A healthy bowel meant a healthy body; the druggist's shop provided a sop to Cerberus, which once thrown must be repeated at intervals.

Beginnings of Constipation in Infants.

In most infants the bowels began to act naturally, but once dosing had begun it was a labour of Sisyphus to stop it, for at sign of any bad temper, fit of crying, or slight ailment, down would go another dose. The evil of constipation thus began early in life; it was not until the age of 3 or 4 or even later that the fully developed symptoms of the disease attracted attention. The child was brought to the doctor because it was a bad feeder and sleeper, cranky and ill-tempered, thin, and anæmic; tonics of all sorts have been tried, digestive mixtures galore, and above all, plenty of nourishing food. This last item covered a great part of the trouble; such a case was easily and successfully treated by allowing three meals a day instead of the customary five or six (with extras). Some agreement as to what was meant by constipation was necessary; the simplest definition of the condition was "the retention in any part of the bowel of the unused or unusable food that has been ingested." Animals living a healthy life (which lap dogs did not) passed their excrement at such times and in such places as suited their convenience; in the human being the bringing of the defæcating reflex under the control of the conscious mind and not the upright position, as some would have them believe, first induced the constipated habit. He had learned by bitter experience that little or no useful information could be gained from the answers to questions concerning appetite, the amount eaten, and the action of the bowels; patients always lied about the amount they ate and were quite ignorant as to whether they passed a sufficient motion or not. A daily motion might be large or small, dry or soft; and the amount of it would depend on the bulk of food taken. It was absurd to be satisfied with the answer that there was a daily action. In the majority of cases, at all ages, the amount passed was probably not the totality of the content of the big bowel; there was probably always a residuum. In a normal bowel the sensation of fæces in the rectum was uncomfortable and led to evacuation, but the civilised bowel had been educated to neglect this feeling. If a patient could not diagnose his own constipation it became the doctor's duty to neglect the patient's opinion on the subject and decide for himself. Until the diagnosis of constipation was taught the disease would continue unabated. For some years, with a certain amount of success, he had been trying to diagnose the condition without X ray examination. If fæcal lumps were felt in the rectum or colon the patient was constipated; this diagnosis was often possible and not difficult provided the abdominal wall could be relaxed. He thought that a further step might be taken; if the colon, in part or in whole, was constantly distended the diagnosis was justified. Beyond these two signs he had not discovered any of use, apart from that series described by Sir Arbuthnot Lane.

Was there any connexion between constipation and the common and increasing conditions of adenoids, enlarged tonsils, and decay of the teeth? Would these common conditions become less frequent if constipation was prevented? He believed them to be close allies. Again, was proptosis ever congenital? It could be traced to very early life, and was due to overloading. If a child ate largely and from appetite all that was placed before it, it did not suffer permanently or even temporarily so long as the appetite was not unduly excited by a rich and tempting diet, and so long as the bowel emptied itself properly.

Dangers of "Feeding Up."

If food was taken by the dictates of Nature the latter would find means of disposing of it rightly: the only physical sign found was a slight distension of the stomach and some flatulence in the bowel. Far different was the result produced by the "feeding-up" process, where a child eating sparingly as Nature dictated caused alarm to anxious parents; then came the treatment considered necessary, and the more the child complained the more nourishment was given, together with a ferruginous or other tonic. Under the strain the intestinal organs became and remained bent, the abdominal fat was absorbed, and the whole contents of the abdomen progressed downwards towards the pelvis, although partially restrained in their course by artificial struts and ties, and this terrible illness was established. The cause of all

these later abdominal troubles was to be found in the baneful expressions "nourishing food," "digestible food," and "feeding up." Nature, without prompting, dictated in all healthy individuals the amount of nourishment required. The suckling child took the amount it wished; after the suckling period was past, we were told that "all food must be nourishing and digestible." Nature pointed out when the time came for a change of diet; why should we direct the contrary? All food ought to contain a considerable proportion of indigestible substances, for this part of the ingesta passed through from one end to the other and acted as a gentle stimulus. The contents of the colon ought to be indigestible and ought to be bulky, and they could not appear there unless they had been swallowed. But as much as possible of those things that are considered indigestible were rigidly and purposely excluded from the diet of young children, whereas the skins of fruits and vegetables—e.g., of apples and potatoes—the stalks of vegetables—e.g., cabbage—and the skins of animals ought in every case to be included. Young children were not allowed to eat hard food for fear of damage to their teeth, with the result that a child with strong undiseased teeth was rare. Further, as a result of want of use of the muscles of the mouth and jaw, the mouth and throat did not develop as they should, the throat became blocked with growth and nasal breathing was impeded. These children were constantly dosed; they became liable to feverish attacks, and for each attack they were dosed again. This was wrong, as was also the feeding of feverish patients—e.g., those with measles and pneumonia. No fevered patients required more than a minimum of food; even when it was forced on them they probably assimilated little of it. These attacks were ushered in with loss of appetite and with thirst; the patient's one demand was for drink—even inveterate smokers lost all taste for tobacco. As much drink as was demanded should be allowed. He knew of no greater comfort to a pneumonia patient than to restrict all nourishment to water, and had for many years followed this practice, of which one of the most gratifying results was that no laxatives were required. The tongue did not dry up, it cleaned rapidly, and the appetite returned with the disappearance of fever. A simple enema might be required to wash out the lower bowel, and need never be refused, for it gave great relief by encouraging the passage of flatulence, and no fear need be entertained of a habit being produced.

Diet for Adults.

In course of time the incidence of constipation and its consequences would tend to diminish; but this result can only come with the growing up of the present generation, and the doctor was left face to face with the problem of the adult population, with two alternatives—diet, and medical treatment by enemas or drugs assisted by massage and physical exercises. The best method was by diet; he believed that people could eat as much as they wished provided that the food passed through quickly enough, and that all residuum was cleared daily. Among suggestions for prevention of constipation, mention of the mind must not be omitted. One hundred years ago Dr. Reece recommended "bringing the mind to bear on the intestinal canal, peristaltic motion being easily retarded or increased by this medium." The body should be exercised daily; all systems of exercises had in common the drawback of taking up too much time, and the great majority of those who began them gave them up after a few weeks or months. To overcome this difficulty he had modified a few exercises taught him at school by the old drill sergeant. (The exercises were shown on the screen.) The advantages claimed for these exercises were that (1) they occupied a very short time (1½ to 3 minutes); (2) they were suitable for young and old; (3) they worked every joint in the body; (4) they called especially for frequent and deep respiration; and (5) the heart had to put out its best to carry them through.

Discussion.

Dr. WALTER BROADBENT said he agreed with practically everything Dr. Des Vœux had put forward. He thought skipping might take the place of the exercises shown on the film. Peristalsis in the colon differed from peristalsis in the small intestine in that it occurred in mass form, and only four or five times a day, being occasioned by the ingestion of meals and by defæcation. Gastric and duodenal ulcers, among other factors, delayed food and prevented dilatation of the ileo-cæcal valve, thereby causing stasis. Undue motility of the ascending colon also caused stasis. He did not believe in the part said to be played by kinks; many people had kinks who had not constipation; 75 per cent. of constipation was due to loss of sensitiveness and distension of the upper rectum as a result of neglect or inhibition of the impulse to defæcate. Constipation often arose in infancy as a result of carelessness on the part of mother or nurse. Babies should be encouraged to defæcate every day, soon after a feed. When older they should not be allowed to go out to play after breakfast until they had had an action of the bowels. A few years ago a difference was to be noted between the sexes with regard to constipation; the latter was found more frequently among females. The more hygienic modern corset, the better provision of water-closets in girls' schools, and probably increased athleticism among girls, had benefited the latter. X ray examination was valuable for accurate treatment, but was expensive. The early morning cup of tea and a glass of hot water at night were useful, together with fruit at beginning of breakfast and at other times during the day, figs and rhubarb being the best. Stasis frequently began at the sigmoid, and treatment should be started at that end. The best form of treatment was with glycerine suppositories, or with enemata given for three days running after breakfast. If these failed, recourse must be had to drugs, among which he rated salts low.

Dr. D. M. BARCROFT said that constipation was not a disease but a symptom, and a symptom not of any great value from a diagnostic standpoint, as it figured in the picture of the great majority of described diseases. The fact that a patient confined to bed was unable satisfactorily to evacuate the bowels with a bed-pan showed that posture was a factor in proper defæcation; posture might, therefore, be equally a factor in the prevention of mild constipation. As Prof. John Chiene, of Edinburgh, used frequently to point out, the most satisfactory posture was with the thighs acutely flexed. Defæcation was a combination of voluntary and involuntary mechanism, and was also the terminal fact in a series of involuntary muscular efforts and in the elaborate chemical process of digestion. The process of evacuation of waste material, like the process of the taking of meals, should be regular; but it was impossible to speak dogmatically as regards intervals of time. The patient should try to establish a habit, that the evacuation should be at approximately the same time every day. Passing on to treatment, the multitude of quack medicines made it unusual for a doctor to be consulted about constipation unless the latter were severe. It was possible to form an idea of the wide variations of the normal conditions of the bowels. In constipation there was often a big element of muscular overstretching and fatigue, in view of which the forcing of muscular contraction with cathartics and the employment of large enemata were equally harmful.

Dr. W. W. STOCKER agreed that constipation was a symptom, not a disease. In abnormal cases evacuation of the bowels might be retarded for months. Auto-intoxication, diagnosed by the patients themselves, led them to take purgatives, with the result that a vicious circle was set up. Real fæcal sapræmia sometimes occurred, or fæcal tumours which had to be carefully distinguished from malignant growths. In young women the swollen colon pressing on the uterus might cause intense pain. Sedentary habits and laziness gave rise to constipation; the modern lavatory

seat was too high and anatomically incorrect, giving rise to a mechanical difficulty. Prevention was all-important in treatment. Aperients should not be used; a normal saline draught, one quart in the morning, would act as a high enema and clear the small intestine first. Lubrication was necessary and organotherapy useful.

Dr. E. P. FURBER described the commencement of constipation in infancy, when the child was frequently scolded with regard to defæcation and otherwise taught to regard the act as unpleasant. Other causes were faulty diet, pathological conditions such as a grumbling appendix, visceroptosis, a painful anus resulting in fear of the act, and damage to the pelvic floor. He showed an American colon douche, known as Till's cascade, which he had found useful.

Dr. P. B. SPURGIN defined constipation as not only a packing together of the intestinal contents, but as an inability to evacuate a quantity of fæcal debris corresponding to the amount of solid food taken—a habit due to various causes. Children developed this habit through being encouraged by mother or nurse to put the act off; some children were also very obstinate, and lack of perseverance on the mother's part led to the habit. He also referred to the misuse of aperients and to the harm done by the weakness resulting from over-exercise of a child's muscles. Irregularity of the hour of defæcation was natural in a very young child, but in an older child should be discouraged. He deplored the habit of many adults of dosing themselves with aspirin to remove the headache that accompanied constipation.

Dr. H. MORELAND MCCREA believed that the causes of constipation varied in the differing decades of life. In the first decade of childhood, after the period of infancy, laziness was the main cause, and the sexes were equally affected. In the second decade it grew commoner in females, chiefly because of shyness and of the still existing insufficiency of lavatories in girls' schools. In the third decade women still led, as pelvic disorder began to tell. In the fourth decade males were beginning to lose their advantage; the commonest cause of constipation in women at this age was the loss of muscle power in multiparæ. From the ages of 40 to 50 the sexes were again about equal. Hypothyroidism of the menopause now became a factor. As regards treatment, diet was important; it was hard to make the mother understand what harm was done by milk in the causing of constipation. The time would finally come for the use of drugs; and drugs hurrying through the small intestine did not benefit the patient. The obstruction should be found with X rays; if it was higher than the cæcum no purgatives should be given. He found cascara the most useful drug.

Dr. SPENCER closed the discussion and Dr. DES VŒUX briefly replied.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF PATHOLOGY.

A MEETING of this section was held in the Royal College of Physicians of Ireland on Nov. 2nd, Dr. JOSEPH T. WIGHAM, the President, being in the chair.

Dr. W. D. O'KELLY demonstrated

A New Method of Making Museum Jars.

He pointed out that in connexion with glass jars there were certain difficulties. It was hard to get them the size to fit all specimens, and it was also hard to store them, as being made of glass they were brittle and very easily broken. He now made his own jars of celluloid. By doing this he was able to get the jars any size he required.—The PRESIDENT said that the method was one by which it was possible to economise weight, fluid, and expense, and also the jars really showed off the specimens they contained to better advantage than did glass jars.

Dr. A. R. PARSONS described a case of early Hanot's disease, with specimens prepared by Dr. A. C. O'Sullivan.

Dr. GEOFFREY HARVEY and the PRESIDENT followed with a case of splenic atrophy with thrombosis of the splenic artery.

Dr. H. C. C. DEANE contributed

An Unusual Case of Tubal Pregnancy.

The patient was admitted to the Royal City of Dublin Hospital on August 11th, 1923, complaining of abdominal pain. She was 38 years of age, married ten years, had three childred aged 8, 6, and 3 years, all alive and healthy. She had had no abortions, miscarriages, or premature births. Since the birth of her last child her periods had never been regular. Sometimes complete amenorrhœa occurred for three or four months at a time. She complained of constipation, otherwise she was in good health. The first attack of abdominal pain occurred about ten days before admission to hospital. The pain came on suddenly, and was confined to the lower abdomen, being more marked on the left side. The pain passed off gradually, and in two days' time she was up and about apparently as well as ever. A week later she had another attack which was similar to the previous one, but was more severe and accompanied by dry retching. The following day the patient was admitted to hospital. On examination she looked well, pulse and temperature normal. There was tenderness but no rigidity over lower abdomen. Otherwise examination was negative. There was a history of three months' amenorrhœa. Three hours after admission she got a severe attack of abdominal pain accompanied by dry retching. On being examined again the patient was pale, temperature subnormal, and pulse rapid and almost imperceptible. The lower abdomen was tender and rigid. There was no dullness or distension and no abdominal respiration. Rectal examination revealed a boggy mass filling up the pouch of Douglas. There was no blood in the vagina.

She was operated on at once. As soon as the peritoneum was divided an abundant escape of blood and clot occurred. The lower part of the abdominal cavity and the pelvis was filled with blood and clot. The Fallopian tube on the left side was identified. A loop of intestine was adherent to the tube and broad ligament. The intestine was freed, and a tumour about the size of a walnut was revealed midway between the uterus and the infundibulum. This tumour presented on its upper surface an opening with ragged edges from which blood was oozing. The tube was removed and the abdomen closed. A few days after the operation a uterine cast was expelled. Both this cast and the tube were sent to Dr. E. C. Smith for examination. She was discharged from hospital 25 days later, and is still alive and well.

In describing the tumour, Dr. SMITH said that on naked-eye examination it was found to be composed of dark-coloured friable tissue, very like blood-clot. It was covered in part by a shiny smooth membrane. Numerous blocks were taken and paraffin sections made. In most of these chorionic villi were present, they were very irregular in size, some looking like those seen in a hydatid mole. The arrangement of the covering cells was rather atypical. Islands and strands of syncytium were abundant, and also irregular groups of Langhans's cells. In some of the sections the tube wall was seen to be infiltrated by the fœtal cells, small syncytial masses were lying between the muscle fibres of the wall. He was doubtful as to whether the condition should be regarded as a simple tubal pregnancy or one tending to become a chorion epithelioma. Another point which he thought was of interest was the formation of well-marked decidual cells around the vessels as could be seen in the sections. The uterine cast was found to be composed of poorly formed decidua, as is usual in cases of extra-uterine gestation. It was degenerated and hæmorrhagic in parts.

In the discussion which followed Dr. T. T. O'FARRELL remarked that this condition was sometimes believed to follow gonorrhœa.—Dr. R. J. ROWLETTE said that as it was three months since the operation, and as the patient was now quite well, malignancy of the tumour was out of the question.

Dr. T. O. GRAHAM described a case of

Intrathoracic Sarcoma.

The patient, male, a labourer by trade, aged 39, came to the Eye and Ear Hospital complaining of difficulty in swallow-

ing and breathing. He was somewhat hoarse, and had a very bad cough. At first it was thought he might be suffering from aneurysm of the aorta. He was slightly cyanosed, the veins were distended, and he was very short of breath. On percussion an area of dullness was found over about two-thirds of the chest. He was transferred to the Royal City of Dublin Hospital, and was recommended to the Coombe Hospital for treatment by the Erlangen method. The night before he was to go for treatment, however, his condition became serious, and after intense dyspnœa, lasting about seven minutes, he died.

Dr. A. C. O'SULLIVAN in describing the specimen said that the tumour was rather soft, and very hæmorrhagic. The growth extended into the glands on the right side of the neck, and it also descended as far as the pericardium. The heart, lungs, and the lower portion of the pericardium were completely free. There had not been infection of the abdominal glands, but the glands behind the stomach and the pancreas were affected. The spleen was rather enlarged, but not infected at all. The cells were very regular and small, just a little larger than lymphoid cells, but not the large cells which were generally seen in lympho-sarcoma.—The PRESIDENT asked whether the difficulty in breathing in this case was due to the size of the tumour, or was caused by nerve involvement.—Dr PARSONS said that in most cases of internal sarcoma he thought that difficulty of swallowing was not a symptom. When the patient came into hospital he said that he had had these symptoms for two months. There were large glands in the axilla, but no pleural effusion whatsoever.

Reviews and Notices of Books.

BÉCHAMP OR PASTEUR?

By E. DOUGLAS HUME. Founded upon MS. by MONTAGU R. LEVERSON. London: Simpkin, Marshall, Hamilton, Kent and Co.; Chicago: Covici-McGee. 1923. Pp. 296. 6*s*.

Pierre Jacques Antoine Béchamp was born in Lorraine in 1816. He was educated as a pharmacist, was professor successively at Strasbourg, Montpellier, and Lille, and died in Paris in 1908. Most of his long and vigorous life was occupied with the establishment of his doctrine of microzymas. It is not altogether easy to make out what this was from the present account, which is put together by the author of "The Multiplicities of Una" from materials accumulated by an enthusiastic admirer of Béchamp. But it seems that microzymas are intracellular molecular granulations which are, like Altmann's granules and the micellæ of some recent French authors, the fundamental units of living matter. They produce ferments, are responsible for the functional activities of tissues, and are physiologically indestructible. They may develop into bacteria, which are the result and not the cause of disease, either inside or outside the body; thus the putrefaction of a corpse is due to the microzymas which built it up changing their form and function after death; and the bacilli in the blood in anthrax are developmental forms of elements of the animal's own tissues. Shortly, then, Béchamp's point was that germs were not pre-existent independent organisms; Pasteur said they were: both objected to spontaneous generation.

There is probably much that is of interest in the abundant writings of Béchamp; a list is given at the end of the book. And if anyone wants to judge how far he anticipated Pasteur in some of his views, and which of them barked up the right tree when they found themselves in the same wood, he must go to these originals. In the Hume-Leverson summary Béchamp is the injured and saintly hero, Pasteur the successful villain; it is a version no one can wholly believe. Pasteur no doubt had an eye on his career, and he was apt to be rather short with people who differed from him; Béchamp surely made some mistakes, perhaps a good many. But they both did their best in the pursuit of natural knowledge; they are on the same side in that at any rate.

CANCER.

The Increasing Plague of the Century. An address delivered in the first instance to Sisters and Nurses of the London Homœopathic Hospital; later revised and amplified by GEORGE BURFORD, M.B., C.M., Senior Consulting Physician to the London Homœopathic Hospital. London: John Bale, Sons and Danielsson. 1923. 3*s*. 6*d*.

THE fact that the nursing profession stands as an intermediary between the doctors and the public has prompted Dr. Burford to address sisters and nurses in rather exalted prose and occasional verse on the subject of cancer, which he prefers to call malignancy. His views as to the prevalence, criteria, spread, and therapeutics of malignant growths are in the main orthodox, the differences from accepted opinion being chiefly his claim that emotional stress is a factor predisposing to malignant neoplasms and his emphasis on the connexion between an accidental injury and subsequent development of cancer. There is, indeed, little room for coincidence in Dr. Burford's philosophy. For example, under the heading of the Scope and Warrant of Surgery in Cancer, he states that where removal is impracticable, exploratory invasion into the abdomen alone is on occasion followed by spontaneous complete absorption of the neoplasm. For the rest, the matter in Dr. Burford's address is better than its presentation. Throughout he prefers the abstract to the concrete, the involved sentence to the simple case, the long to the short word. This is not a mere lapse of taste but a serious drawback to a book designed to promote and maintain a sane outlook on malignant disease. Nurses as a class are apt to think and speak in italics, and an attempt to educate them to help their afflicted patients to understand and others to avert malignant disease should emphasise mainly the duty of avoiding panic while seeking advice. The point that pain is not an early symptom of cancer is one of those which are not sufficiently brought out by Dr. Burford, and indeed, on comparing his expanded lecture with the recently published pamphlet of the Ministry of Health, there is but little doubt which would be more acceptable and informative to the average nurse.

A MIND THAT FOUND ITSELF.

By CLIFFORD WHITTINGHAM BEERS. London: William Heinemann. 1923. Pp. 411. 7*s*. 6*d*.

THE present edition of this work appears to differ in no respect from that reviewed in these columns about a year ago, except in the fact that it has found a London publisher. Since its original publication in 1907 the narrative has, of course, undergone much revision, chiefly in the direction of excluding mere propaganda, much of which, thanks to changes due largely to the author's own influence, is now irrelevant. In fact, the original purpose of the book has been achieved in America, and it has taken its place rather as a classic in the literature of psychiatry. No other such account as this of an attack of insanity has ever been written; the combination of exact memory, literary ability, and quite unusual powers of introspection and self-analysis must be sufficiently rare in potential authors of this kind to render it quite improbable that this example will be equalled in the future. Perhaps its most remarkable chapter is that which describes the early hallucinations of the author's malady, and the features in his environment on the misinterpretation of which a system of delusions was built. This process is traced in considerable detail, and illustrates vividly the ease with which a small error in management, such as a careless word from the physician or attendant, may give rise to a new delusion.

It is perhaps not true to say that the book's purpose is fulfilled. Its chief lesson is the dependence of the patient on the sympathy of the nurse—the sympathy and consideration which certainly appear to have been lacking in the attendants who had charge of the author at certain periods of his illness. However perfect the administration of an asylum, the type of nursing which is something more than merely efficient will always require an amount of patience and self-devotion which is not exercised without effort, and it will always be the purpose of this book to point to the necessity for such effort, and its supreme value to the patient whose chief trouble is that he is without a friend. Mr. Beers has devoted his subsequent life to bettering the condition of the insane in the United States, and it is fortunate for them that his malady has not recurred. He recently visited this country, where many members of the Medico-Psychological Association had the pleasure of meeting him.

MINOR MALADIES AND THEIR TREATMENT.

Fifth edition. By LEONARD WILLIAMS, M.D., Physician to the French Hospital. London: Baillière, Tindall and Cox. 1923. Pp. 414. 7*s.* 6*d.*

THE enthusiasm of youth, the experience of age, combined with the ready use of a fluent pen, make the new edition of this well-known book an instructive guide and comforter to the practitioner of medicine, be he young or old. It is full of useful information gained from the practice of one who is a careful observer of all he sees, and who evidently delights in meticulous analysis and loves tabulation. The chapters run on from one subject of common interest to another, and give a vivid account of illness as it presents itself in the consulting and sick room. The reader cannot be dull for one moment while reading the circumstantial narration of those complaints with which he is most familiar, for whatever may be his previous knowledge, he will be certain to find some original thought and suggestion either in diagnosis or treatment. Whether he will be inclined to follow all the arguments of the author—for example, those whereby he conclusively separates such diseases as rheumatism and "goutiness"—is another matter, and whether he will find all treatment as successful as Dr. Williams seems to suggest is open to question. But he cannot fail to learn much from this little book that is useful in practice.

INFECTIVE DISEASES.

Die Experimentelle Bakteriologie und die Infektionskrankheiten, mit besonderer Berücksichtigung der Immunitätslehre. By Dr. W. KOLLE, Direktor des Institutes für Experimentelle Therapie, o. Honorarprofessor an der Universität Frankfurt a. Main; und Dr. H. HETSCH, Professor, Generaloberarzt und Mitglied des Institutes für Experimentelle Therapie in Frankfurt a. Main. Berlin and Vienna: Urban and Schwarzenberg. Pp. 1376.

THIS is a treatise upon the whole aspect of infective diseases, touching upon their clinical manifestations, diagnosis, pathology, and experimental investigation; it also deals with such animal infections as are of importance in relationship to the study of human disease. Of necessity a work of this scale must be largely a compilation; this is admirably put together. It is a type of book which is at present much wanted in the English language. In works on medicine, in this country, we have nothing which so efficiently and broadly bridges the gap between the laboratory worker and the clinician. The latter is too often content with methods which have had a long and honourable past, but which can be adapted and improved upon only if full knowledge of scientific medicine be added to them. The laboratory worker, on the other hand, although he possesses an acquaintance with the more intimate workings of disease processes is, as a general rule, debarred from any active contact with cases of disease. There are thus few men who have the knowledge or the opportunity to produce such a work.

We recommend the book to all physicians who desire to know what has been done and can be done in the investigation of infective diseases.

MEDICAL AXIOMS, APHORISMS, AND CLINICAL MEMORANDA.

Second impression. By JAMES ALEXANDER LINDSAY, M.A., M.D., F.R.C.P. London: H. K. Lewis. 1923. Pp. 194. 6*s.*

THIS is an excellent little book, one which would have delighted the late Samuel Gee, and we can give it no higher praise. Dr. Lindsay is well known as professor of medicine in the Queen's University of Belfast and as a valued teacher in the medical school of the same University. The first chapter alone of the book contains a mine of information—e.g., 53: "Think of common diseases first." Some wise physician has said: "The young physician generally thinks first of an obscure disease and the old one of a common one, and both are occasionally wrong." But we agree with Dr. Lindsay that the safer way is to think of the common disease first. Again, take aphorism 60, a saying of Sir Dominic Corrigan: "The trouble with most doctors is, not that they don't *know* enough, but that they don't *see* enough." Too many of us *look* without seeing. The clinical memoranda are admirable. In the section on anæmia (p. 165) we rather question whether memorandum 94 is not a little too wide: "An anæmia which does not yield to iron is not chlorosis, provided sufficient rest and suitable diet are secured." Here are two aphorisms which may be taken together. The first on p. 6: "Few studies are more instructive, more full of warning, or more generally neglected than the study of the history of medicine." And the second on p. 160: "In the treatment of renal dropsy common salt should be excluded from the dietary." This treatment, applied it is true to dropsy in general, was laid down by John of Gaddesden in the Rosa Medicinæ, circa 1314. On the whole we can imagine no more useful book for practitioners of all ages.

EXAMINATION OF THE ORGANS OF SENSE.

Handbuch der biologischen Arbeitsmethoden. Vol. V.: Methods of Study of the Functions of Individual Organs of the Animal Organism. Part 7, Section 3, No. 105. Edited by Prof. Dr. EMIL ABDERHALDEN, Director of the Physiological Institute of the University of Halle. Berlin and Vienna: Urban and Schwarzenberg. 1923. Pp. 330. Fr. (Swiss) 13·5.

THIS is part of a large series of publications on physiological methods of experimental examination, and deals with subjects of very unequal medical interest. The first article, by Jakob Katzenstein, on the methods of exploring the mode of action of the larynx for voice and speech, gives a full historical description of methods of examination from Garcia's first use of the laryngeal mirror, and describes the application to the examination of the movements of the vocal cords of the stroboscope, an instrument designed in 1834 for the study of vibrating membranes. Photography and kinematography of the larynx are also discussed. Numerous experiments on the cerebral centres for speech are next described, and methods of measuring tone and volume of sound duly recorded, as also are methods of measuring the movements of the lips and palate in speech. The article occupies nearly half the volume and is a monument of industry and learning invaluable to the research worker in this field. H. Zwaardemaker contributes articles on examination of taste and smell; Adolf Basler on examination of skin sensation, tactile, thermal, and

painful; and, finally, Karl Schaefer describes examination methods on the physiological conduction of sound from the air to the internal ear, including investigation of the effect of the auricle and meatus on the conduction of sound waves, and of the movements of the drum-membrane and ossicles to sound vibrations. The work is devoted to the description of methods and gives little or no account of the results obtained, and is therefore of more value to the research worker than of interest to the medical practitioner.

ATOMIC FORM.

With Special Reference to the Configuration of the Carbon Atom. By EDWARD E. PRICE. London: Longmans, Green and Co. 1922. Pp. 148. 5*s*.

IN any considerations affecting the constitution of the atom the phenomenon of crystallisation must have an important place, and it is fair to state that no theories of atomic or molecular constitution which ignore the facts connected with the crystallisation of the elements can be considered as resting on a sound basis. Whilst the constitution of the atom is the subject of physical theories widely separated from the ideas set forth in the present volume it must be admitted that the author marshals his arguments in a clear and concise manner. Some readers who could not accept the theory of atomic form as described will probably find the models of aggregates of the carbonoid an assistance when considering some of the problems of organic chemistry—by enabling them more easily to visualise the structures in three dimensions.

AROMATICS AND THE SOUL.

By DAN MCKENZIE, M.D. Glasg. London: William Heinemann. 1923. Pp. 164. 7*s*. 6*d*.

THE physiology of smell is but very imperfectly understood and smells themselves are curious things (if we may call a smell a thing). Dr. McKenzie refers at some length to the manner in which smells can call up incidents long gone by. It is significant how close is the anatomical connexion between the olfactory lobes and the frontal cortex; even reading about smells will recall the past. Anyone who has travelled in the East must certainly have been conscious of smells when there, and we know a medical man who travelled some 40 years ago in out-of-the-way parts of the East, who tells us that he can never read Kipling's "Miracle of Purun Bhagat" without an immediate mental vision of an Eastern road.

Dr. McKenzie discourses pleasantly about the sense of smell in insects, birds, and animals. There is some doubt as to whether the power which the males of certain moths—e.g., the Great Peacock of Europe and the allied Emperor moth of England—possess of finding their way to a female is really dependent upon smell—i.e., the reception of some material substance or upon some hitherto unexplained wave motion, as Fabre suggests. As regards vultures and other carrion-feeding birds, we may supplement Dr. McKenzie's remarks on p. 85 with a reference to Waterton's amusing essay on "The Faculty of Scent in the Vulture," and the two following essays.

This is an interesting book, if somewhat sketchily written, and the subject is one that deserves further inquiry.

ABDOMINAL SURGERY FOR NURSES.

Second edition. By HAROLD BURROWS, F.R.C.S., Assistant Surgeon, Royal Portsmouth Hospital. London: The Scientific Press. 1923. Pp. 144. 4*s*.

THOUGH this second edition has been enlarged as compared with the first, the author has still contrived to compress within a small space much valuable information as to the "why and wherefore" of many of the points peculiar to the nursing of cases that come to abdominal operation, both in their preparation and in their after-care. In writing a book for nurses a medical man aims to impart such information as will render a nurse's work more interesting and so to secure her intelligent coöperation. To achieve this end the terms used should always be the simplest; in this respect Mr. Burrows has, in spite of obvious care, been occasionally indiscreet. In a future edition the final chapter on feeding might with advantage be enlarged beyond the two pages that are at present devoted to this important part of a nurse's duties.

NUTRITION OF MOTHER AND CHILD.

By C. ULYSSES MOORE, M.D., M.Sc. (Ped.), Instructor in Diseases of Children, University of Oregon Medical School, Medical Director of the Coöperative Infant Welfare Society of Oregon. London and Philadelphia: J. B. Lippincott Co. Pp. 234. $2.

FOR English readers the value of this book is diminished by the fact that a large number of the recipes for foods are not practicable outside the United States. We regret this, because the book as a whole is eminently readable, and the author has given an account of recent advances in our knowledge of dietetics which is both accurate and readily comprehensible. The numerous illustrations are appropriate for the purpose of emphasising the importance of breast-feeding and sound dietetics. The volume fulfils its purpose, and is a useful text-book for the young American mother.

CHEMISTRY.

Bloxam's Chemistry: Inorganic and Organic. Eleventh edition. Edited by A. G. BLOXAM, F.I.C., and S. J. LEWIS, D.Sc., F.I.C. London: J. and A. Churchill. 1923. Pp. 832. 36*s*.

THIS well-known work has survived ten editions, the first appearing as far back as 1867. In these days it is difficult to compress a survey of so wide a field as inorganic and organic chemistry into a single volume, and the editors state that the present form of the work has necessitated a greater condensation than they could wish. The grouping of aliphatic and aromatic compounds will no doubt be criticised in academic circles, but there is much to be said for it from the educational standpoint, since substances of the same order in the two great divisions are brought together. Space has been found for short accounts of present views on the structure of the atom, the quantum theory, crystal structure, &c., whilst, as might be expected when so well-known an expert as Dr. S. J. Lewis is joint editor, the subject he has made so peculiarly his own—viz., spectroscopy—has been rewritten and expanded.

We are impressed with the simplicity of the volume and with its accuracy. It is essentially a text-book for the student.

JOURNALS.

THE JOURNAL OF OBSTETRICS AND GYNÆCOLOGY OF THE BRITISH EMPIRE (Vol. XXX., No. 3).—The current autumn number of this journal maintains the standard established by its predecessors, and justifies the statement that the magazine now holds a position second to none in the obstetrical and gynæcological world.—Mr. Comyns Berkeley, in a brief editorial note, points out that the journal was first published in 1902, being founded by a number of leading obstetricians and gynæcologists not with the object of pecuniary profit, but with the patriotic intention of having a journal which should be a credit to the science, and which should provide a complete and impartial record of British work. Since its inception the journal has, in fact, continued to be financed from motives of public spirit, and Mr. Berkeley issues a stimulating appeal to the younger generation of obstetricians and gynæcologists to shoulder in their turn the burden so long borne by their seniors. From the excellence of the publication, apart from purely patriotic motives, we venture to hope that this appeal will not be neglected.—In the present issue Mr. Victor Bonney contributes a practical

paper upon the pathology and treatment of certain cases of spasmodic diurnal incontinence of urine in women. He points out that its occurrence is practically limited to women who have borne children, and that the cause lies in laxity of the anterior portion of the pubo-cervical muscle sheet.—The subject of operations on the round ligaments for the cure of backward displacement of the uterus is discussed by Dr. Haig Fergusson, who criticises the present vogue for the Gilliam and Baldy-Webster technique, and describes a modification of the Alexander-Adams operation. In his opinion this operation as modified is free from the disabilities introduced by the former methods, and removes the main objection to the classical Alexander-Adams operation—viz., the stigma of working with inadequate knowledge of the conditions in the pelvis.—An interesting study of the histological appearances of the wall of the pregnant uterus at term in the case of the lesser mammals appears from the pen of Prof. Keiffer, of Brussels. Sections of the uterus, stained by the silver method of Ramon y Cajal, demonstrate a very elaborate system of ganglia and nerve axis cylinders extending from the mesometrium through the two muscular strata to the mucous layer. This paper throws much new light upon the complex problem of uterine innervation.—Dr. Norman Cruikshank, working on behalf of the Medical Research Council, describes a case of suppression of urine with symmetrical necrosis of the renal cortex in a parturient woman. The necrosis was apparently the result of thrombosis of the finer arterioles, the latter due to vascular spasm and induced presumably by the action of an eclamptic toxin.—Ante-natal physiology and pathology receives attention in a paper by Drs. Lucas Keene and Evelyn Hewer, upon the results of an investigation into the relative weights of fœtal organs at various stages of development. These authors find that there is a definite slowing down of the rate of increase in weight both of the fœtus and its organs between the thirty-third and thirty-ninth weeks of gestation. They suggest that at this time metabolism is directed towards the laying down of fat, to the detriment of nitrogen retention. Attention is drawn to the fact that this period coincides with the rise in the urea content of the maternal blood, and that a failure in maternal nitrogen adjustment may account for the frequency of eclampsia at this epoch.—An article of considerable general and practical interest is that of Dr. John Hewitt on bacterial infection of the urinary tract complicating pregnancy and the puerperium. This author agrees with Leith Murray's statement that "in the absence of pus there is no real pathological significance in the demonstration of coliform organisms in female urines." He further finds that the most accurate laboratory indication of pyelitis is the presence of pus cells and organisms in a single fresh drop of uncentrifuged urine. The centrifuge in this connexion is unnecessary and misleading—a fact of some importance to the general practitioner.—Mr. Berkeley republishes in convenient form his important opening paper on the use and abuse of obstetric forceps from the Section of Obstetrics and Gynæcology, British Medical Association meeting, 1923. To this reference has previously been made. He also describes a convenient and simple form of vulval retractor designed for operations on the perineum and posterior vaginal walls when assistance is not available.—Other contributions include papers on diffuse endometromyoma of the pregnant uterus, by Dr. C D. Lochrane; chorio-angioma of the placenta, by Dr. Gilbert Strachan; a new method of performing salpingostomy, by Mr. A. Gray; and a description of a clamp forceps for controlling hæmorrhage when performing myomectomy, by Mr. Bonney.—The Review of Current Literature, under the directorship of Dr. Frank Taylor, provides the reader with a very complete quarterly encylopædia of current views throughout the world on obstetrical and gynæcological subjects, and it is indeed a most valuable asset to all working at the specialty.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the principal health statistics of Birmingham and Liverpool for 1922:—

City.	Estimated population (R.G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Respiratory with influenza.	Infant mortality		Maternal mort. in childbirth.
							Legit.	Illegit.	
Birmingham ..	945,100	21·0	11·9	1·1	1·2	2·8	82	178	3·0
Liverpool ..	823,095	26·1	14·6	1·6	1·0	4·2	91	213	2·8

BIRMINGHAM.

Dr. John Robertson opens his report for 1922 with the following graphic statement:—

"Notwithstanding the continued distress arising from a large amount of unemployment and the horrible conditions in which many people are living owing to lack of proper housing facilities, the general health of the community was exceedingly good during the whole of the year. I believe that this maintenance of relatively good health has been due to the care taken by various organisations, but particularly the board of guardians and the Relief Committees, to enable the citizens who are in poverty to obtain sufficient food. I am of opinion that the lesson of the last two years, as well as one of the lessons we learned during the war, is that much more care ought to be taken by the community in providing an adequate supply of food of the proper quality, cooked in the proper way, and served at regular intervals. Not only was the general death-rate last year a good one for a large industrial town, but the infant mortality rate also was low, the incidence and mortality of most of the infectious diseases was relatively good, and, generally speaking, it is correct to say that Birmingham enjoyed unusually good health during this period of distress. All forms of tuberculosis were relatively low in incidence and in mortality."

Dr. Robertson thinks the Registrar-General's estimate of the population is over 17,000 too high. During the year the guardians gave relief to a proportion of the population varying from one-thirteenth to one-ninth, and unemployment insurance benefited a number of persons varying from 54,000 to 86,000. Care was taken to detect general deterioration of health, but no evidence of underfeeding or of obvious damage to the health of the people was obtained. During the past six or seven years measles has been less fatal than formerly, probably owing to the spread of knowledge by health visitors and district nurses as to the simple precautions necessary. Dr. Robertson thinks that further careful observation is necessary before the Schick test can be introduced into the ordinary practice of health departments. It is being tried at the City Fever Hospital. The Tuberculosis Department endeavours to mitigate overcrowding in families, invaded by tuberculosis, by loaning beds and bedding and 110 sleeping shelters, and also by supporting the applications of such families for municipal houses.

The following figures, showing the proportion of patients, whose sputum contained tubercle bacilli, treated during the six years 1913–18 and who are now working regularly, are interesting:—

Year.	No. treated.	Now working regularly.	Year.	No. treated.	Now working regularly.
		Per cent.			Per cent.
1913	505	22·1	1916	207	27·5
1914	573	28·2	1917	212	37·7
1915	308	24·6	1918	191	25·6

Some of the difficulties in the attempt to eradicate tuberculosis from the dairy herds supplying Birmingham with milk are indicated. At the beginning of the

year 16 herds continued in the scheme, five in the city and 11 outside. One herd of about 21 cows which had been in the scheme for several years has dropped out. During the year there were six applications to be included in the scheme. Three of these six herds contained so many reactors that the owners decided not to continue with the scheme. The remaining three herds are to continue in the scheme, making a total of 19 herds in the scheme at the end of 1922. The approximate number of cows in these 19 herds is 501, of which 190 are in the five city herds. Of the 16 herds in the scheme at the beginning of 1922, only six yielded no reactors at the half-yearly testings; nine herds together yielded 20 reactors and the remaining herd yielded no less than 19. In the case of the last-mentioned herd of about 48 cows it is explained that the owner had not fully complied with the conditions, by promptly getting rid of 11 reactors found at the last testing. Most of the cows (in these 16 herds) which failed to pass the test were newly acquired cows which were purchased subject to their passing the test and were returned to the vendors. In some cases the reaction was doubtful, and when this occurs the cow is isolated and re-tested after a month or six weeks. In the city cowsheds, which house 1750 cows, only one tuberculous udder was found during the year. If we subtract the 190 city cows included in the "tubercle-free" scheme, this gives the surprisingly low figure of one tuberculous udder for 1560 stalls, which is a contrast to the Sheffield experience during 1922 of 23 tuberculous udders from 2350 stalls, or one tuberculous udder per 100 stalls.

Dr. Robertson gives tables showing that the infant mortality rate during the quinquennium 1918–22 was in the Central wards 108·6, in the wards of the middle ring 81·8, and in the outer ring wards 62·1; but that for the first few weeks of life there is very little difference between the mortality rates in the three groups of wards.

The total births in Birmingham last year were 19,850. Midwives attended 13,128 confinements, or about 60 per cent., and sent for medical assistance in 1987 cases, or over 15 per cent. of their cases. A systematic effort is being made to secure the coöperation of the midwives in carrying out ante-natal work, and an annual certificate will be issued by the health committee to each midwife who carries out these duties satisfactorily. Ante-natal registers are supplied to them free of charge and a urine-testing apparatus at cost price. In the case of any prejudicial ante-natal condition the midwife is to undertake to send or accompany the patient to her doctor, or to the maternity centre, if she has no doctor or is too poor to have one. Indiarubber gloves are supplied to the midwives and sterilised midwifery outfits to patients, both at cost price. There were 74 cases of pemphigus neonatorum with 11 deaths which came to the knowledge of the inspector of midwives. A special explanatory leaflet was issued to each midwife. The known damage to sight by ophthalmia neonatorum was —one case, left eye blind, right eye severely damaged, and another case, with a scar below the pupil.

The report of Dr. E. H. R. Harries, medical superintendent of Little Bromwich Hospital, contains some interesting particulars as to the working of a system of bed isolation or barrier nursing. The first 800 cases were treated with a wall-space of only 9 feet per patient. The system broke down six times in 800 cases, thrice after the introduction of chicken-pox in the incubation stage, twice after the introduction of measles at a very early stage, and once after septic scarlet fever. In a further series of 293 cases with 12 feet wall-space, there were two cases of cross-infection, after the introduction of incubating measles and scarlet fever respectively. Dr. Harries is of opinion that the eight failures in 1000 cases were due to a flaw in technique and to human-borne rather than air-borne infection. Incubating mumps was several times introduced without causing cross-infection, also whooping-cough.

The paramount need in Birmingham, as everybody knows, is more houses. During the year 902 houses were completed by the corporation and 382, mostly villas, by private enterprise. This number does not provide for the ordinary growth of the population. Dr. Robertson gives his reasons for thinking it is doubtful if ever private enterprise will again play any substantial part in providing small dwelling-houses. Conditions are getting more distressing, and Dr. Robertson regards it as incumbent on the municipality to keep on building.

LIVERPOOL.

Dr. E. W. Hope tells us that during the year further coöperation has been arranged among the Merseyside boroughs. In the event of any disease scheduled under International Agreements arising in any of these areas, the fact will be at once reported to the port medical officer for communication to the consular bodies. In the event of the outbreak assuming grave proportions the medical officer of health concerned will be entitled to call upon his colleagues for assistance. The possibility of unifying the small-pox system and so preventing the very undesirable multiplication of small-pox hospitals has also been under consideration, and steps have been taken in this direction. The provision of the new abattoir does not advance as quickly as Dr. Hope would like. The photographs which he gives of an up-to-date abattoir (Edinburgh) and of the wretched accommodation provided at the obsolete Liverpool abattoir are eloquent testimony of the urgency of this question. The city council have purchased a site of 7½ acres adjoining the Stanley Cattle Market (itself occupying 7½ acres) which is approached by railway sidings and adequate for all the purposes of a modern abattoir. Negotiations have been opened with the Mersey Docks and Harbour Board for the provision of a landing-place on the Liverpool side for imported cattle, but Dr. Hope does not think the scheme ought to be hung up pending the outcome of such negotiations.

The gravity of the position in regard to housing still remains, in spite of the fact that the corporation have erected upwards of 5000 houses and converted army huts into 488 bungalows during the last three years. The number of houses erected by private enterprise is negligible, and there are at the moment several thousands of applications from persons housed under bad conditions who are well able to pay reasonable rents for accommodation could it be found. "It is not necessary," says Dr. Hope, "to dwell on the position of families whose accommodation is limited to one room for all purposes, but it is clear that such conditions are gravely prejudicial to the public health and the welfare of the city." Some of the incidental results are an increased demand for admission to hospital for minor ailments and for maternity homes, increased risks of the spread of tuberculosis and of the quick relapse of patients returning from a sanatorium, and interference with education by the ill-health of children living under these conditions. A large part of the time of the health visitors is occupied in dealing with conditions arising from the house shortage. The Housing Committee are keenly alive to the unfortunate plight of thousands of applicants whom it will be impossible to house for a number of years at the present rate of building. It is, therefore, says Dr. Hope, a matter of urgent necessity that every possible facility should be accorded private builders in order to induce them to resume their normal industry.

Liverpool and the Merseyside boroughs have asked the Ministry to receive a deputation on the subject of compulsory treatment for venereal diseases. The matter was postponed pending the report of the Trevethin Committee, and Dr. Hope points out that this Committee in its report has recognised the necessity for special measures in special areas. Towards the end of the year legal, medical, and financial officers from the Ministry visited Liverpool to study methods in operation, and Dr. Hope expects that one point, in which efficiency and economy go hand-in-hand, is likely to be achieved—namely, the amalgamation of the medical inspection of school-children and the medical supervision associated with

welfare work. During the influenza epidemic in the early months of the year there was a great excess of female deaths, the excess being at the child-bearing ages and the age-period over 50. Altogether there were 123 male and 210 female deaths recorded as from influenza.

A chart is given which shows that the marked decline in deaths from excessive drinking which occurred coincidently with the restricted sale of alcoholic liquors during the war still continues. A similar observation applies to deaths of infants from suffocation. Thirty deaths from gas-poisoning were recorded during the year, 17 accidental and 13 suicidal. The bodies of 438 stillborn babies were examined by the city bacteriologist. Of these only 30 gave positive evidence of syphilis, while 21 were suspicious.

St. Paul's Eye Hospital of ten beds and cots for the reception of infants (with their mothers) suffering from ophthalmia neonatorum has proved of great value. Nevertheless, the damage to the eyesight of survivors from this disease was considerable. In two cases the sight of both eyes was lost, in two cases the sight of both eyes was seriously damaged, in three cases the sight of one eye was lost and the other eye was normal. Delay in bringing the disease under proper treatment is mentioned as a cause of these bad results. Ten cases died under treatment and the result is not given in the case of five under private treatment, one in a Poor-law institution, and one removal. The section of the Liverpool Corporation Act, 1921, dealing with the registration of lying-in homes came into force in April, 1922. The number of applications received was 60 and of these 54 were approved after investigation of the practice and premises. The number of rooms registered in the 54 homes containing 145 beds was 110, with 15 additional emergency rooms. The number of live births which took place in these homes was 482 and of stillbirths 10.

In the section dealing with tuberculosis interesting particulars are given of the after-history of Liverpool cases of non-pulmonary tuberculosis discharged from Leasowe Sanatorium. Of 260 cases discharged with the disease quiescent during 1919, 1920, and 1921, the following was the condition in December, 1922: 228 were fit, 13 had been readmitted for recurrence, 3 had been readmitted for deformities, 5 had died, and 11 were not traced. Of the five deaths, two were from phthisis, one from recurrence of the non-pulmonary lesion, and one from a non-tuberculous cause. In all except one the non-pulmonary lesion had remained quiescent. A third of the 228 fit for work "were unable for physical reasons to commend themselves to an employer," and it is pointed out that this raises the question of after-care or schools for this type of case, so that they can be taught some skilled trade or specialised occupation which will endow them with a greater labour value.

SCHOOL MEDICAL SERVICE.

Scarborough.

THE axe of so-called economy has not spared Scarborough; it is unfortunate that it should have fallen on the excellent nursery school which was the result of the past few years' effort in this direction, and was a feature of the school medical officers' previous reports. The nursery class established in the east end of the town is still alive in the Friarage School. The conditions here are not ideal, there is no garden, but it provides accommodation for between 70 and 80 boys and girls under 5 years of age. There were 44 new admissions during the year. Fortunately, although unrecognised by the education committee, the Leamer-road Nursery School, which is a separate building with a large delightful garden, has not entirely ceased to function—voluntary contributions are helping to keep it alive, and though the numbers in attendance have fallen, it is to be hoped that its eclipse is only temporary, for its entire disappearance would be a matter for regret not only to Scarborough but to all educationists who have watched the growth of the nursery school movement. During the past year 1890 children were inspected in the routine age romps, and altogether 2809 children were medically examined. Dr. S. F. Linton complains that the worst cases of uncleanliness, of which there were 90 altogether, are not Scarborough children but children from industrial towns, and some cases have had to be cleansed at the clinic and their hair cut. The number of children found with ringworm was 66 as against 102 last year. The number is still high, and as there is no X ray treatment available, the school attendance of these children is seriously interfered with in spite of the most careful treatment with ointment. Dr. Linton experiences difficulty in persuading parents to have children with defective vision examined under a mydriatic. "The modern mother classifies it in the same category as vaccination—an unnecessary and unwarrantable interference with the comfort of her child." Of dental cases requiring treatment, 82 per cent. were dealt with. No means for general anæsthesia is available, although one or two cases especially requiring anæsthesia have been sent to the local hospital for treatment.

Dover.

Nearly one-half of the 5711 children in attendance were medically inspected in the routine group, and of these 902 had defects requiring treatment, while 294 were kept under observation. The school clinic was open for treatment on 188 occasions, the children treated numbering 1118, of whom 717 required dental treatment. There were 91 cases of ringworm, 131 less than the previous year, and the amount of impetigo also showed a considerable decrease. Cases treated have certainly covered a wide range: goitre 2, abdominal tuberculosis 2, tuberculosis of lungs 8, respiratory defects 15, vertigo 2, anæmia 13, pleurodynia 3, to mention only a few. There were also 56 cases of debility and 33 of enlarged glands. Dr. A. B. McMaster regards these two classes as very important, and urges that something should be done for the education and treatment of tuberculous and pre-tuberculous children such as these 56 cases of debility represent, stating that the number of such cases is increasing owing to economic conditions.

Northampton.

Since the beginning of the present year the school work has been under the supervision of Dr. J. D. McCrindle, who is also medical officer of health. Dr. G. H. Skinner, who resigned in October, 1922, has been responsible for the work dealt with in this report. Of 3162 children medically examined, 33 per cent. were referred for treatment or further observation, and of the 662 referred for immediate treatment 81·9 per cent. actually received it. The total number of cases of skin disease treated at the school clinic was 1027 cases out of 1140 cases reported.

The school dentist saw 2479 children, of whom 1436 received dental treatment. Mr. A. S. Anderson, the school dentist, states that during the six and a half years he has been school dentist here he has treated 9503 individual children, 5243 of whom had their teeth rendered absolutely free of decay. During that period he did not find any evidence to support the old theory that sugar is the cause of dental caries, and states that the poorest of poor children have the best teeth. "If they have it seems an odd argument, as the staple diet of such has been for many years bread with inferior jam, treacle, or syrup. Most of the children I find with perfect teeth admit the free use of sweets, while many with the worst are those whose parents say they have denied them sugar in any form." He suggests that children should be treated in the pre-school period. Many children, a number of them breast-fed, show well-defined caries on the eruption of the temporary teeth, and in some infants there is a rapid general dental decay, suggesting that the condition of the health of the expectant or nursing mother needs investigation. Decay of the permanent teeth is comparatively rare when any sign of decay in the temporary teeth has been thoroughly eradicated before the eruption of the permanent set, and Mr.

Anderson suggests that where treatment of a bad case has been delayed until the first permanent molars and incisors are in place the surfaces of contact and fissures are almost always chalky in appearance, and despite cleanliness are inclined to break down. This statement is one that should be taken seriously, and is one more indication that the pre-school age is the age to which more attention should be drawn.

MENTAL HOSPITAL REPORTS.

THE annual report of the *Cardiff City Mental Hospital* is distinguished, as usual, by records of a large amount of research. Only brief outlines of the nature of these investigations are given, since much of it is to be published in extended form elsewhere. It seems unfortunate that the results of so large a volume of work should be scattered amongst various journals under different dates, or published only in abbreviated form in the report. The standing of the hospital is such that these reports might well be concentrated in a separate publication. The main bulk of the work under review was serological and chemical, the latter comprising estimations of various constituents in the cerebro-spinal fluid, blood, and urine, which have been carried on for some years, and the former a variety of attempts to identify toxins by animal immunisation with body fluids or extracts. A study has been made of gastro-intestinal function by radiography, and the effect of various intestinal antiseptics has been observed on the clinical condition of recent cases. Blood-groups, urea excretion in dementia præcox, and the basal metabolic rate have also been studied. Strangely enough, the only investigation the results of which are given in detail appears the least complete and discriminating of any, the bacteriological examination of urine from a series of 100 cases, a variety of organisms being found, some of which appear not to have been identified. As regards the general work of the hospital, a new departure has been made in forming a social after-care association, which, with the out-patient clinic and the hospital itself, should develop into "a complete organisation for dealing with the problem of mental disorders from the point of view of prevention, cure, and warding-off of relapse."

Several innovations and improvements are recorded in the annual report of the *Dorset Mental Hospital*. A house is being built for the assistant medical officer, and extensive reconstruction of the drainage system has apparently had the effect of abolishing enteric fever, which has been endemic for some years. A dental surgeon has been appointed, and an out-patient clinic established in Dorchester at the County General Hospital. The commissioner's report acknowledges with gratitude the readiness with which the management have considered and carried into effect such suggestions as he has made in the past. A considerable amount of pathological work has been done, and in order to allow the medical officers further time for this, the appointment of a dispenser is recommended. In view of certain treatment which has been undertaken, it appears to the commissioner desirable that this (and in fact any) institution should be provided with continuous and electric baths.

Reports and Analytical Records.

OLEO-BI.

(HOFFMANN-LA ROCHE CHEMICAL WORKS, LTD., 7–8, IDOL-LANE, LONDON, E.C. 3.)

THE introduction of bismuth as a specific remedy for syphilis was followed by an extensive trial of numerous preparations. Some 18 months ago at the Académie des Sciences MM. R. Sazerac and P. Levaditi brought forward evidence that tartro-bismuthate of sodium and potassium in certain combinations, applied in the form of an ointment, prevented the development of syphilis if the application was made within one to four hours after contamination, while they expressed the opinion that bismuth lactate administered by the mouth retarded the breaking out of specific lesions. Last March in the *Schweizerische medizinische Wochenschrift* Dr. E. Ramel, of the Dermatological Clinic in Zurich, recommended an oleinate of bismuth, l'oleo-bismuth "Roche," the formula of which is $(C_{17}H_{33}COO)_3$—Bi. The preparation is now on the English market. In it the bismuth is very finely suspended and the stability of the suspension is so great that even after standing for months the solution shows no deposit. The treatment consists of bi-weekly intramuscular injections of 2 c.cm., 20 or 30 injections being given in one series, during which the total amount of bismuth administered is 2–3 g. The therapeutic results achieved in Zurich appeared to be equal to those obtained after the use of the French preparation Trépol. The results achieved during the past two years by the use of bismuth in the treatment of syphilis have stimulated the Hoffmann-La Roche chemical works to produce a second new preparation Tartro-Bi for which certain therapeutic advantages are claimed when employed intravenously.

PROTAGULIN.

(JOHN BELL AND CROYDEN, LTD. (INCORPORATING ARNOLD AND SONS), 50–52, WIGMORE-STREET, LONDON, W. 1.)

We have received a sample of this preparation, which is devised to bring about natural clotting of blood by the action of thrombin. It is supplied in the form of a powder, and so long as it is kept in properly sealed tubes will retain its potency for an indefinite period. It is issued in tubes of two sizes, the smaller size sufficing to make 1 c.cm. of solution with normal saline, the larger size containing enough to make double the quantity. The coagulant is prepared and standardised in the physiological laboratory of St. Mary's Hospital and is particularly recommended for use in hæmorrhage following extraction of teeth, in which capacity it has been noticed by Sir Frank Colyer in the last edition of "Dental Surgery and Pathology." The solution can be used upon gauze plugs in cases of epistaxis, or as an application upon gauze under a suitable bandage in cases of surface bleeding.

URAZINE.

(DICK, COATES AND CO., 41, GT. TOWER-ST., LONDON, E.C. 3.)

Urazine, or citro-salicylate of piperazin, placed upon the market by Messrs. Dick, Coates and Co., is manufactured by the Laboratoire des Produits "Usines du Rhône," 21, Rue Jean Goujon, Paris. It is supplied in effervescent granules, the dose being one to two teaspoonfuls of the granules in half a tumbler of water, to be administered under the direction of the physician. It is usually found most convenient to take the drug with the two principal meals of the day. The chemical constitution of Urazine is as follows: 2 molecules of piperazin, 1 molecule of citric acid, and 1 molecule of salicylic acid united in 1 molecule of a "double" salt, which contains 343 parts of piperazin to 275 parts of salicylic acid, and 382 parts of citric acid. The intention is to combine the properties of salicylic and citric acids with those of piperazin whose action as a solvent of uric acid has been proved in the laboratory. As is well known, this solvent action of piperazin is a matter of discussion, but the experience of many gouty persons seems to be that their conditions are benefited by its exhibition. The preparation taken in the suggested dose makes an agreeable beverage, so that the drug may well be employed in many of the arthritic and neuralgic affections accompanying gout or rheumatic conditions.

IODINE-MEDOL.—In a note on this preparation, which appeared in THE LANCET of Sept. 15th, we presumed that by the term "oxygenated hydrocarbon" was meant the mixture of liquid paraffin and oleic acid referred to in the British Pharmaceutical Codex under the name of "parogenum." Messrs. William Pearson, Ltd., desire to point out that the hydrocarbons in iodine-medol consist of oxygenated paraffinoids, whereas in "parogenum" there is no question of oxygenation.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 17, 1923.

THE PANEL SETTLEMENT.

THE panel crisis has become a panel settlement. As was anticipated, the Special Panel Conference on Wednesday last decided to accept as a whole the offer made by the Minister of Health in his letter of Oct. 31st, and to accept in particular alternative (*b*) in clause (5) dealing with remuneration. Accordingly, a special court of inquiry will be set up by the Minister as soon as possible and instructed to report on the capitation fee to be paid as from Jan. 1st next. The contract will be made on the basis of the fee recommended by the court of inquiry, the Government undertaking to go to Parliament for the necessary legislative sanction and the profession undertaking to accept the recommendation. The court of inquiry will be asked to report as soon as possible, hearing any evidence tendered on behalf of the Ministry, the profession, the approved societies, or other interested parties. No doubt the Insurance Acts Committee hardly felt itself justified in recommending any settlement which might involve financial sacrifice to many panel practitioners for years ahead. But panel committees themselves had accepted this sacrifice as the lesser of two evils, the Committee might have been glad to fall in with the other settlement which would have ensured a period of welcome peace. The Committee was willing to face the prospect of going through the same ordeal again in 12 months' time, and the Conference has agreed with their leading.

Widely divergent reasons may be given by interested parties for the decision reached by the Panel Conference. On a previous occasion of financial stringency the Conference accepted a reduction in the capitation fee from 11*s.* to 9*s.* 6*d.*, following an appeal of a Minister of the Crown to panel doctors to make some sacrifice for the common good in order to carry on an essential service for which at the moment their service could not be adequately remunerated—put briefly, the acceptance was on grounds of citizenship. The approved societies would certainly have argued that acceptance by the doctors of 8*s.* 6*d.* for five years, being in effect not more than a 6 per cent. rise on the fee of 1914, was a tacit admission that the service was overpaid at the earlier date. We think it may be taken that the Conference actually construed the position somewhat as follows. The Minister of Health, faced with a practically unanimous resignation from the panel, and having looked into the whole matter in a mood sobered by a serious position, decided that "under the present circumstances" so much, and so much only, could be paid out of insurance funds. Should this decision be modified or reversed by a court of inquiry, within a year the Minister—we speak of the office, not of the individual—convinced against his will would have the opportunity of showing that he held the same opinion still. But arguments were put forward to prove that the services and remuneration of the practitioners were not properly adjusted, these arguments remained unrefuted, and therefore the medical men were ready to face a court of inquiry. Two documents widely circulated during the past few days no doubt helped towards this decision. The first is a copy of the letter sent to the Minister of Health, on behalf of the executive bodies of approved societies, dated Nov. 1st, and signed by Sir THOMAS NEILL. This letter is a statement of the societies' case against "the proposal to appropriate towards the remuneration of panel doctors for the present type of medical service sums contributed by the insured population and their employers for other benefits." One may well ask what is here referred to? The Minister of Health is the trustee of all the funds contributed by insured persons, their employers and the State, towards an insurance scheme including many forms of benefit; it is incorrect to say that particular contributions are earmarked for any particular benefit, and equally incorrect to suggest that the taxpayer's contribution ought to constitute a separate fund. We now know from the Minister's formula which are the primary benefits under the Insurance Acts, and that the proper amount of remuneration to be paid to the doctors is a matter to be determined on its merits by the Government after due inquiry and after negotiation with them. Those who still are impressed by anxiety for other benefits under the Acts should refer again to a document read with great effect by Dr. H. B. BRACKENBURY at a previous Panel Conference,[1] in which this paragraph occurs:—

"We agree that the service would be such as to justify a capitation fee to the doctors of substantially the present amount [that is, 9*s.* 6*d.*] without ruling out of the present consideration any claim by the medical profession for something beyond this, and we have satisfied ourselves that the National Health Insurance Fund in the aggregate contains sufficient money to meet the cost without lowering or endangering the provision of the other benefits, whether normal or additional, to which insured persons are entitled."

This document was signed by two members of the emergency committee appointed by the executive bodies of approved societies. In contrast to the official pessimism of the approved societies in regard to insurance finance, we have the report on National Health Insurance Medical Benefit prepared by the Joint Advisory Committee on Public Health and accepted by the Trades Union Congress General Council and the National Executive of the Labour Party. This document, of which we give a careful summary on another page, sets out in detail the various funds connected with National Health Insurance, including those in respect of which approved societies are officially regarded as having little, if any, financial interest. The conclusion at which the Joint Advisory Committee arrives is that it is possible, within the ambit of unallotted funds constituted out of present weekly contributions, to find sufficient to secure not only a continuance of the existing services, but also the introduction of various improvements, and this at a cost which would not deprive the insured persons of any of the benefits which they at present possess. Despite the alleged prospect of depreciation at the completion of the second valuation, there are certain profits to set off against losses—e.g., low sickness incidence, and a continuance of the improved interest-earning power of money. These two reports really balance each other out; and, whatever may be urged to the contrary within the next few weeks, the new Parliament can feel satisfied on the highest actuarial authority that the financial status of the present scheme will allow of continued development and the provision of adequately paid medical service.

[1] THE LANCET, Oct. 27th, pp. 948, 949.

No difficulty, we believe, will be found in obtaining Parliamentary endorsement of Sir W. JOYNSON-HICKS'S offer. The Panel Conference has decided to refuse a prolonged period in which controversy might cease and during which a Royal Commission could decide what is in the best interest of the national health. A settlement for a period of five years would have had its points, giving ample time for the service to settle down again, while the Commission was affording opportunity for full investigation both of the immediate and potential value of the insurance service to the community. However, the Conference has decided on the bolder course, and courage commands esteem. We trust that no further attempt will be put forward to make health insurance entirely self-supporting. Properly developed and coördinated, the scheme of medical services under the Insurance Acts should become, as years go by, the most important of the agents of the Ministry of Health for improving the health and safeguarding the lives of the industrial workers.

A STUDY OF OSTEITIS FIBROSA.

THOUGH our knowledge of morbid histology still leaves much to be desired and authorities differ among themselves on the interpretation of facts which are accepted by all, our conceptions of the morbid processes of the body rest, on the whole, upon a fairly sound structural basis. The skeletal system is, however, a glaring exception to this generalisation. While in most pathological laboratories histological examinations are made every day of the digestive, respiratory, circulatory, or genito-urinary organs, bones are but rarely microscoped, and because of this we know very much less about diseases of bone than we do about diseases of other tissues. The explanation lies, of course, in the technical difficulties which must be overcome, and the amount of time and labour involved in the preparation of satisfactory histological material from the skeleton. To examine a diseased bone with anything like the same thoroughness which is commonly devoted to a sclerotic kidney or an interesting tumour would occupy so long that in the routine of a busy laboratory the task is seldom attempted, and this aspect of morbid histology is poorly represented in the current literature.

In view of these considerations, pathologists will welcome the appearance of the October number of the *Edinburgh Medical Journal*, for it is devoted entirely to a long paper by Dr. JAMES W. DAWSON and Mr. JOHN W. STRUTHERS on Generalised Osteitis Fibrosa with Parathyroid Tumour and Metastatic Calcification. These authors describe the remarkable case of a man, 49 years of age, who first came under observation in January, 1921, on account of delayed union of a fracture of the humerus. X ray and microscopic examination of the humerus showed a condition of fibrosis and decalcification suggesting an early stage of osteitis deformans, and similar changes could be detected in the cranial bones. After a very brief period in hospital the patient's condition, both local and general, showed extraordinary improvement, and X rays demonstrated the redeposition of lime salts in the humerus. He left hospital, but returned within a few weeks with a second fracture of the bone which healed in about five weeks. After a period of good health he was seized with a sudden heart attack, and was again admitted to hospital, but died a few hours afterwards. Post-mortem examination revealed an extensive condition of osteitis fibrosa of the left humerus, femur, and of the bones of the skull. The left lower parathyroid body was converted into a papillary adenoma, and practically all the organs showed calcareous infiltration. The authors describe in detail, illuminating their text by many admirable illustrations, the histological changes in the affected bones. The general conclusions arrived at are that the fixation of calcium and the metabolic activities of bone are controlled by the bone cells, which, in turn, are themselves under the influence of hormones derived from the parathyroid glands. The parathyroid adenoma in this case is regarded as an indication of an abnormal physiological state, an anatomical hyperplasia reflecting a functional hyperactivity called for by the needs of the bone cells which had been injured and rendered physiologically impotent by some unknown agent.

These views may or may not receive general acceptance, but this complete record of a case forms a most valuable addition to the literature of the subject. The paper contains, however, more than the record of a single case: it is a clear and critical presentation of current knowledge and teaching of the pathological processes involved in bone dystrophies. Such debatable processes as halisteresis and metastatic calcification are discussed very fairly and with full references to the literature, and the various neoplastic giant-cell formations are analysed in detail. In short, the authors are to be congratulated upon a piece of work which will be of actual assistance to most workers in this field, and of interest to all

PSYCHOPATHIC SYMPTOMS IN MINERS' NYSTAGMUS.

WHILE the mechanism which produces nystagmus in miners may be in doubt two things are certain. Nystagmus may be present without causing subjective symptoms, while psychopathic symptoms, such as tremor, disordered action of the heart, and sleeplessness, occur in miners with or without oscillations of the eyeball. To these facts we called attention in discussing not long ago a new theory of coal-miners' nystagmus. In a letter which appears on p. 1110, Mr. W. INMAN returns to this important issue. The second report of the Miners' Nystagmus Committee of the Medical Research Council makes clear that it is not the nystagmus alone that demands compensation. Compensation is paid largely for the associated psycho-neurotic symptoms, and the Committee suggest the adoption of a stricter standard of physical signs. But what physical signs exist beyond the nystagmus? The standardising value of photophobia and blinking of the eyelids is discounted by the observation that they occur commonly in shell shock, for in that association they are unhesitatingly regarded as hysterical. Mr. INMAN suggests that the oscillation of the eyeballs may itself be only a part of a psycho-neurotic state. He really offers two possibilities: that the nystagmus is a harmless physical eccentricity, upon which it chances that psycho-neurotic symptoms are hung, as upon a peg; or that it is only one symptom, and not a constant one, of a psycho-neurosis which, though it occurs in miners, differs in no other way from disorders with which we are already familiar. An obvious objection to the latter possibility is that nystagmus occurs generally as part of certain organic disorders and can only very exceptionally be imitated. But non-volitional manifestations, such as tachycardia or tremulous eyelids, are common in the psycho-neuroses, and, though they are valuable diagnostic indications, yet they may be absent in patients with disabling mental symptoms, or, on the other hand

may be almost the only indications of a psycho-neurotic state. Nystagmus behaves similarly. It may be present in a severe degree in certain cases without interfering with the man's working capacity, whilst the third schedule to the Workmen's Compensation Act seems to reduce diagnosis to an absurdity by speaking of "the disease known as miners' nystagmus, whether the symptom of oscillation of the eyeballs be present or not." The report notes, too, that the nystagmus may disappear as the associated symptoms increase. This sequence is a commonplace in clinical psycho-pathology and was the rule in shell shock; the initial manifestations—coarse tremors, mutism, paralyses, and the like—usually disappeared and subjective troubles increased.

Current opinions as to ætiology are supported by statistics which show a correlation between the incidence of the disorder and the use of the safety-lamp, though Dr. FREDERICK ROBSON [1] produced figures showing a correlation with the presence of a high percentage of gas in the mine. Both these correlations are capable of a unifying interpretation, for the miner is inevitably aware of the significance of the safety-lamp or the presence of gas. The word *safety* in this connexion hints at *danger*—it is the naked candle that indicates safety—and fear of the dangers of the miner's calling may well tend, as fear always does, to produce a psycho-neurosis. The miner's traditional courage in face of real danger provides no contradiction to this hypothesis, for it is not the expression of fear, but its suppression, that leads to the outbreak of symptoms. More difficult to reconcile with the hypothesis is the observation that the incidence of nystagmus declines when illumination is improved, the danger obviously remaining unchanged. Every psycho-neurosis has many determinants. Compensation is potent in increasing this disability, and this fact alone should arouse suspicion of affinities with what may be termed the compensation neuroses. But this suspicion must not lead to the assumption that stoppage of compensation will arrest the psycho-neurosis. There may be a pitfall in deductions drawn from the absence of nystagmus in other countries, for though "suggestion" cannot produce a psycho-neurosis it may determine a symptom, and we might find that nystagmus is replaced, in those countries where compensation is not given, by other manifestations the nature of which is unsuspected. That a psycho-neurosis is prevalent in particular circumstances is an indication that those circumstances are such that the ordinary man finds it difficult to adjust himself to them; and the mental and physical stress of a miner's life cannot be denied. Indeed, in this subject the psycho-pathologist would meet new problems at every turn, and Mr. INMAN's hypothesis is disquieting by the difficulties which it suggests.

As long as the inquiry was confined to a search for a physical cause there was hope of a definite and simple solution. Indeed, on the assumption, which is held by many distinguished authorities, that the main cause of true miners' nystagmus is defective lighting, considerable efforts have been made to remove at least one important factor in its causation. The complexity of the problem of miners' nystagmus is indefinitely increased if it must be investigated anew from the psychological aspect. Yet, if that aspect possesses the significance that Mr. INMAN suggests, there is every reason for the fullest inquiry, both on economic grounds and on account of the clinical importance of the principles involved.

[1] THE LANCET, 1923, i., 961.

Annotations.

"Ne quid nimis."

STANDARDISED DRIED MILK.

THE Minister of Health has circulated to local authorities the regulations[1] in regard to the labelling and composition of dried milk which will come into operation on May 1st, 1924. These are in general similar to the regulations affecting the sale of condensed milk issued earlier in the year.[2] From the prescribed date no one will be allowed to offer for sale any dried milk intended for human consumption unless it conforms to a definite standard and is distinctly labelled to that effect. Milk described as dried full-cream milk must contain not less than 26 per cent. of milk fat, if described as three-quarter, half, or quarter-cream milk, not less than 20, 14, or 8 per cent. respectively of milk fat. Skimmed milk—that is to say, dried milk containing less than 8 per cent. of milk fat—must bear a label upon which is printed in bold letters the fact that the milk is unsuitable for feeding infants. The actual label in this case is as follows:—

> DRIED MACHINE-SKIMMED MILK
> [or DRIED SKIMMED MILK].
> UNFIT FOR BABIES.
> THIS TIN CONTAINS THE EQUIVALENT OF
> (*a*) PINTS OF SKIMMED MILK.

Severe penalties are laid down for wilful neglect or refusal to carry out the regulations, and all those who are interested in child welfare will welcome these provisions as they did the provisions in regard to condensed milk. The purchaser of dried milk will obtain full information as to the value of the article bought, and it will be his own fault if he is misled or misinformed. We can only hope that the central health authority will continue its beneficent campaign against misleading descriptions of essential foodstuffs. The regulations will help the honest traders.

SEDIMENTATION OF ERYTHROCYTES IN NERVOUS DISEASE.

IT has long been known that the rate at which erythrocytes settle in a column of blood varies greatly, but it is largely owing to the recent investigations of the Swedes, Fahræus and Westergren, that this phenomenon has been exploited and made the principle of a delicately graduated test. It was found by Fahræus that in the healthy male the rate of sedimentation of the erythrocytes in a tube with a diameter of 1 cm. is about 3 mm. per hour, and in the healthy non-pregnant female it is about 5 mm. We recently called attention to the work of Dr. Mironesco, of Bucharest, on the sedimentation test as applied in certain acute infectious diseases.[3] In a paper published in *Paris Médical* for Sept. 29th by two other Bucharest physicians, Dr. Paulian E. M. Démètre and Dr. N. Tomovici, it is shown that this test is remarkably instructive in certain diseases of the central nervous system. The technique followed by the authors was perfectly simple. Into a 1 c.cm. syringe there was first aspirated 0·2 c.cm. of a 5 per cent. solution of sodium citrate, a vein was then punctured, and enough blood aspirated to fill the syringe. The citrated blood was then transferred to a tube with a diameter of 4 to 5 mm., and the extent to which the column of erythrocytes had sunk was recorded in millimetres every 15 minutes. It was found that in

[1] Circular 452. Statutory Rules and Orders, 1923, No. 1323. H.M. Stationery Office.
[2] Standardised Condensed Milk, THE LANCET, 1923, i., 972.
[3] THE LANCET, Sept. 1st, p. 473.

tabes the rate of sedimentation is greatly increased, particularly during the first quarter of an hour. As one of the published charts shows, the rate of sedimentation in a case of tabes was 12 mm. in the first quarter of an hour, 6 mm. in the second, and 2 mm. during the following half hour. The chart referred to indicates graphically the normal rate of sedimentation, the curve of which appears almost horizontal when compared with the abrupt fall of the curves of three cases of tabes. In the healthy male there was a fall of only 1 mm. during the first quarter of an hour, and the same rate of sedimentation was maintained throughout the test. In marked contrast to this straight and almost horizontal line was the tabes curve, which showed an abrupt fall, followed by a gradual flattening. In general paralysis the authors found a fall of 12 mm. in the first quarter of an hour and 4 mm. in the second. Still more interesting were their findings in cases of paraplegia due to various causes. When the paraplegia was not due to a specific disease the rate of sedimentation was slow and practically normal, but when the paraplegia was due to syphilis or to Pott's disease this rate was greatly increased. The curious observation was made that the rate of sedimentation is not the same in true Parkinson's disease (paralysis agitans) and in post-encephalitic Parkinsonism. In the former it is comparatively rapid, being 18 mm. in the first half hour. In the Parkinsonism following lethargic encephalitis the rate of sedimentation is only about 1 mm. every quarter of an hour. These findings suggest that the close clinical similarity of these two conditions is only superficial, and that their underlying causes are distinct.

THE "MILITARY SURGEON" AND ITS EDITOR.

THE October issue of the *Military Surgeon* announces the sudden death of its very able Editor, Colonel James Robb Church, after six years in office. Colonel Church was 57 years of age, having qualified in 1893 at the George Washington University Medical School and retiring from the United States Medical Service in 1917 with the rank of Colonel, to become Secretary-Treasurer of the Army Medical Museum at Washington. The journal which he edited is the official organ of the Association of Military Surgeons of the United States, and has recently completed its fiftieth volume. The *Military Surgeon* is packed with interesting information, and has for many years provided us with a critical review of army medical equipment as seen from a standpoint differing from our own. In the October number Surgeon E. R. Marshall, U.S. Public Health Service, tells what the United States are doing for their lepers, who are estimated at 1000 persons. Congress in 1917 provided sufficient funds to establish a national "leprosarium," and in 1921 the Louisiana State Leper Home at Carville, with 358 acres, was bought for the nation. At present it has 172 beds; plans have been prepared for 500, and, when these are achieved, Congress may make provision for 1000. Patients are received at their own request, but they can be apprehended, under the law, and detained. There is an unclimbable fence (with 12 strands of barbed wire) around the estate, and there are a farm and tennis-courts; mention is made of a player-piano, gramophone, and two moving-picture shows weekly (to which the patients have by subscription added a third); thus amused, they are almost contented in their isolation. Patients are treated with the ethyl esters of chaulmoogra oil and in some cases their condition is improved, the improvement reaching a maximum in six months. Great care is taken of the eyes of the lepers. A dentist found that 70 per cent. had pyorrhœa, and 17 per cent., after serological examination had been made, proved to be also affected with syphilis. Major M. A. Reasoner, Medical Corps, U.S. Army, who has done duty with the U.S. troops in Coblentz, reports on an observation trip in Germany, Denmark, and England, made in spring this year. He comments on the open sale of contraceptives in London, and states that "the present economic conditions are so bad, and there is so much unemployment and such a lack of housing facilities, that it serves to some extent as an excuse. Unfortunately for the good of the country, it gets the people into bad habits, and if this keeps up, they bid fair to rival the French." He adds, one regrets to see, "In no place in Europe have I seen so many bleary-eyed, besotted wrecks of humanity as in London." He is pleased with the work of the hospitals in Germany, especially the pathological work, but finds them financially in a bad way. Yet he thinks Germany is doing better work in chest and abdominal surgery than across the Atlantic, although in every other way the United States surgeons are ahead. With Denmark he is very pleased: "Standards in medicine and surgery are unusually high"; "the best equipped laboratory I have ever seen" is that of the National Serum Institute at Copenhagen, and the hospitals "do not seem to suffer the want of anything." Lieut.-Colonel A. P. Francine, Medical Officers' Reserve Corps, U.S. Army, argues that mustard gas was a disabling, not a destructive weapon, and in fact much more humane than shot and shell; it left little subsequent permanent damage.

ANGINA AGRANULOCYTOTICA.

UNDER this title Dr. Friedemann,[1] director of the Infectious Diseases Department of the Rudolf Virchow Hospital, Berlin, who records four fatal cases in women aged from 22 to 57, describes a form of gangrenous angina accompanied by high fever and characterised by a complete or almost complete absence of the neutrophil leucocytes in the blood, while the other elements of the bone marrow, especially the blood-platelets, are present in normal numbers. All the cases hitherto observed have proved fatal in two or three weeks' time. Soon after the onset of the disease sore-throat develops, and a severe angina occurs which at first closely resembles diphtheria, but with progressive destruction of the tonsils assumes the appearance of necrotic angina. The characteristic feature of the disease, however, is the blood picture. The leucocytes are present in extremely small numbers, in some cases less than 1000 per c.mm. The results of a differential count are more striking still, as the leucocytes are found to consist almost entirely of lymphocytes, and the neutrophil polymorphonuclears are entirely absent, or only a very few can be found after a prolonged search, while the other elements of the bone marrow are present in normal quantity. This isolated absence of the neutrophil polymorphonuclear leucocytes has not hitherto been described in any other disease. The autopsy findings are not characteristic. The absence of any myeloid changes in the spleen, liver, and bone marrow is remarkable. Nothing definite can be said as to the ætiology of the disease. Nothing characteristic is seen in smears from the tonsils, spirochætes or spirilla being absent in all cases. The blood cultures were negative in three cases, and in another three cases fairly abundant colonies of *B. pyocyaneus* were found, but this organism was probably not the cause, but only a secondary invader. The pathogeny also requires elucidation, as it remains to be seen whether the change in the blood picture is the result of the angina or whether the angina develops with a pre-existing agranulocytosis. The diagnosis is difficult at first, owing to the resemblance to severe diphtheria, but the commencing necrosis of the tonsils should suggest angina agranulocytotica. A diagnosis is not possible from the clinical appearances alone, as these are very similar in streptococcal angina necrotica, severe specific angina, and the angina in leukæmia and other blood conditions. The blood picture alone is decisive. The prognosis, according to the cases reported by W. Schulz and Friedemann, is very bad, but it is an old experience that in a newly discovered disease it is only the

[1] Medizinische Klinik, Oct. 14th, 1923.

severest cases that are seen at first, while the milder forms escape recognition. Further observations will show whether the disease has really such an unfavourable course as it appears to have at present. It is impossible to say now whether angina agranulocytotica is actually so rare as might be supposed from the few cases published, for it is possible that many of the cases described as malignant diphtheria with negative cultures were really examples of this disease.

"SCHOOLS IN THE SUN."

FOR a long time past schools in the sun have been available in the summer for many groups of continental children. During last summer the opportunity arose in connexion with Stowey House open-air school for delicate children under the London County Council. Only one class was started and the experiment was tried under a sympathetic headmaster and with frequent visits from the school doctor. The summer did not prove very favourable for such an experiment; May and June were overcast, July was better, but in August, when insolation was good, the school was closed. In spite of this drawback and the fact that the school was in London the results have been very encouraging, and the headmaster has been pleased with the outcome both from the mental and the physical side. The boys themselves showed great keenness, and no difficulty was found in obtaining the coöperation of the parents. Other classes, indeed, were anxious to be allowed to join in, and a further trial will be made next year. We learn also that sun treatment has been carefully carried out during last summer under the supervision of Sir Henry Gauvain at King George's Sanatorium, Bramshott, where there are a number of sailors of various nationalities suffering from surgical tuberculosis. Here also the results were satisfactory, and the men were keen to avail themselves of the treatment right on into the autumn. While undergoing sun treatment the patients are encouraged to undertake manual work, basket-making, and the like. The monotony of long-enforced recumbency is thereby alleviated, the patients are happier and more contented; discipline is improved. The combination of heliotherapy, aerotherapy, and occupation has proved of great value in the treatment of these adults, and the contrast between the appearance of these patients and similar cases for whom such advantages are unobtainable is striking.

EXPERIMENTS ON PLAIN MUSCLE IN VITRO.

USING various types of plain muscle—e.g., uterus and intestine of the cat, guinea-pig, and rabbit, the sphincter of the iris of the cat, and the retractor penis of the dog—and suspending them at 38° C. in an appropriate saline, whose hydrogen-ion content could be varied, Prof. C. Lovatt Evans and S. W. F. Underhill[1] have been able to study the movements of the excised surviving organs under varying conditions of hydrogen-ion concentration. Since oxygen or other gas bubbles through the surrounding fluid, attention must be paid to the fact that plain muscle is extremely sensitive to mechanical stimuli. It was found that the effect of increase of hydrogen-ion concentration, within limits compatible with life, is to cause relaxation of the tone of plain muscle. Rhythmical contractions, such as those of the small intestine, are slowed and depressed in extent on the acid side of neutrality, and quickened and depressed when the reaction becomes decidedly alkaline. Excessive acidification leads to death in a relaxed state. In muscle preparations devoid of tonus increase of hydrogen ions has no effect. These effects are independent of action on local nervous mechanisms. When the preparation is immersed in a definitely alkaline bath of phosphate solution (pH 8 or more), addition of acid often produces an increase of tonus or a large contraction. This effect, well seen with the guinea-pig uterus, is believed to be due to alteration in the ionic calcium content of the fluid, and not directly to the hydrogen-ion concentration. The experiments also show that the mechanism of contraction and tonus in plain muscle is different from that in striated muscle. In the same issue of the journal Prof. Lovatt Evans records also some interesting observations on oxygen consumption in the tissues. The surviving uterus and the small intestine of various animals—the mucosa was in some cases left intact, in others removed—were used in two different methods, and both gave similar results. When in tonus the muscle uses less oxygen than when relaxed; this is because the surface of the fibres is reduced. After a period of oxygen lack, the oxygen consumption is increased. A higher temperature, within physiological limits, increases the oxygen usage; the maximum is reached at 43° C. The temperature coefficients at different ranges of temperature are not the same, but as in other instances show a diminution with rise of temperature. In view of the fact that cyanides check the oxygen usage of tissues generally, small additions of sodium cyanide were tried. Cyanides depress, but apparently do not abolish, the oxygen usage of the tissue.

[1] Journal of Physiology, vol. lviii., No. 1.

DIURNAL INCONTINENCE IN WOMEN.

THAT incontinence of urine is one of the most distressing afflictions which occur in women who have borne children is generally conceded. Minor degrees of this uncomfortable symptom are very common in women over 40 years of age, especially when some effort is made which produces sudden abdominal strain, such as coughing or sneezing. Attention has recently been directed to this subject in various papers, more especially in communications by Prof. B. P. Watson, of Edinburgh, at the British Congress of Obstetrics and Gynæcology, and by Mr. Victor Bonney at the Royal Society of Medicine. The most recent contribution is that of Mr. F. H. Seymour before the Brighton and Sussex Medico-Chirurgical Society, in which he expresses surprise that British gynæcology has paid so little attention to this condition. That may be true of published work, but we feel sure that most gynæcologists are aware of the inconvenience caused to women by this symptom, and even if advice is not directly sought on this point the question is commonly put in the out-patient department and the consulting-room. Mr. Bonney has, however, very rightly drawn attention to the importance in the diagnosis between urethrocele and cystocele. Treatment directed towards relief of the latter will not cure incontinence commonly associated with the former. A point emphasised both by Mr. Bonney and Mr. Seymour is that the causation of incontinence in parous women in many cases is in no way connected with genital prolapse, but is due rather to a very typical displacement of the urethra. In these patients the urethra, on expulsive efforts such as coughing, wheels round the subpubic angle with the result that for a brief moment it looks forwards and upwards. It is at this moment that the incontinence occurs. The causative factor appears to be relaxation of the "pubo-cervical muscle sheet" which normally supports the female bladder, and more particularly the anterior third of this sheet. An interesting observation is that incontinence of this type is more likely to occur when the bladder contains very little urine than when the organ is full. The dilatability of the vesical sphincter in women is, of course, well known, for comparatively large calculi have been removed per urethram without any subsequent incontinence. Should the symptom, however, occur as a result of laceration and trauma of the sphincter through the extraction of large calculi, the dribbling of the urine is continuous and, we think, in the opinion of most surgeons difficult to rectify. The spasmodic incontinence noted by Mr Bonney and Mr. Seymour is, on the other hand, relieved in the majority of cases by a plastic operation designed to reinforce the unstriped muscle fibres beneath the

urethra by means of buried unabsorbable sutures. In the technique described by Mr. Bonney the urethra is exposed by a vertical incision through the anterior vaginal wall and the sutures are introduced transversely. Should a cystocele be present, this simple operation is combined with an anterior colpoplasty. No pessary apparently suffices to cure incontinence of this type.

OXYGEN STORAGE AND TRANSPORT.

THE use of oxygen in medicine, although comparatively infrequent, is of high importance, chiefly for the reason that when it is needed it serves a purpose which cannot be met by any substitute. To make our meaning clear, we need only refer to its employment in conjunction with anæsthetics and to its use in extreme conditions of pulmonary insufficiency. The work done by the Oxygen Research Committee and the report[1] which they have recently issued are, therefore, of especial interest to medical men. The fundamental problem before the Committee was to try to furnish, especially for aeronautical, medical, and other scientific purposes, more ready means than those existing for the utilisation of oxygen. In the view of the Committee, and our readers will share it, there is urgent need, for use in hospitals and for other special purposes, of cylinders even lighter than those which were recommended by the Gas Cylinders Committee. It will be remembered that in 1921 this Committee recommended and specified lighter cylinders for trade use. The Research Committee has been principally concerned with the possibility of increasing the use of oxygen in its liquid form. The difficulties of economic production on a commercial scale are great and are not dealt with in this report. A great part of the report deals with double-walled metal vacuum vessels, the chief vehicle for transport of liquefied oxygen or air. A number of experiments and of highly complicated physical investigations bear witness to the labours of the Committee. These do not, however, much concern the medical practitioner; he will be more interested in the question of the price of oxygen, which, as the Committee state, at present "restricts its use for medical purposes to quantities much below those in which it could usefully be employed." Unfortunately the Committee declare themselves unable to express any opinion as to the possibility of reduction in the present cost of oxygen.

PERI-ARTERIAL SYMPATHECTOMY.

THIS operation has been hailed as one of the most important advances in modern surgery; it formed an extremely interesting demonstration at the Zurich Surgical Clinic during a recent visit from British surgeons. Recent accounts, however, suggest that the hopes entertained are not being fulfilled. Leriche, with whose name this operation has been associated, has pointed out that the notoriously refractory behaviour of certain ulcers and other lesions is due to vasomotor-trophic disturbances, and that a scar or other morbid condition in the periphery may start a reflex travelling to the central nervous system through the peri-arterial network of sympathetic nerves to be found in the outer coat of the large arteries to the limbs. By the simple expedient of removing a circular strip of the outer coat of these arteries he anticipated that a break could be made in this injurious reflex, the vaso-constrictor action being abolished, and more favourable conditions for nutrition being restored to the parts concerned by the local vaso-dilatation and hyperæmia supposed to follow this operation. Most physiologists believe that the vaso-constrictors belong to the sympathetic system, but run only to a certain extent in the peri-arterial network, some following the course of the spinal nerves. The vaso-dilators, on the other hand, run only with these spinal nerves. Other physiologists, however, believe that all the vaso-constrictor nerves, as well as all the vaso-dilator nerves, run with the spinal nerves, that the nerve supply of the large blood-vessels is strictly segmental, and that the sympathetic nerves do not run continuously with the large arteries to the periphery. It is obvious that so long as these fundamental matters are in doubt, the rationale of peri-arterial sympathectomy must be "in the air." As for the clinical results obtained from this operation, it would seem from a recent communication[1] by Dr. Klug to the *Naturhistorisch-medizinischer Verein*, in Heidelberg, that they are very modest. His own experience of 16 cases operated on at Enderlen's hospital has not been favourable, although great care was exercised in the selection of cases and the technique of the operation was sedulously correct. In every case temporary hyperæmia of the parts distal to the field of operation did, indeed, occur after the operation, but the former state of affairs soon recurred. Observation of the peripheral blood-vessels with the capillary microscope also suggested that the beneficial effects of this operation were only transitory, and tests with adrenalin and other substances failed to show any essential differences between the limb operated on and its fellow. It is evident that the Leriche operation is at present under a cloud, and it would have been better if its physiological foundations had been securely established before it was passed on to the clinician. But as a stimulus to physiological research in this field the operation may, after all, have served a useful purpose.

INFLUENCE OF DIET ON INTESTINAL FLORA.

THE cry of "intestinal infection" having become almost a slogan of a certain school of clinicians and bacteriologists, Prof. L. S. Dudgeon was wise to point out in his presidential address to the Section of Tropical Diseases and Parasitology of the Royal Society of Medicine that this term is sometimes employed without clear understanding as to its significance. The presence of abnormal bacteriological findings in the fæces is not evidence of intestinal infection, because in the healthy subject the most efficient means for the discharge of bacteria is by the fæces. Harvey Cushing and Louis Livingood[2] many years ago classified the intestinal flora into (1) permanent or obligatory intestinal bacteria, (2) transient or facultative forms. They considered that the members of the first group are invariably present, while in the case of the second group the bacteria appear only after they are introduced with food or by similar means. These transient bacteria do not find in the presence of the permanent flora cultural conditions which favour their perpetuation, unless they encounter or produce a pathological lesion of the mucosa. The obligatory forms, in their opinion, are also dependent to some degree upon dietetic influences. During recent years, the bacteriological methods employed for the study of the intestinal flora have been considerably modified and elaborated. Results based on such methods of investigation, however, are open to countless fallacies unless the influence of the following factors is fully appreciated: (1) The patient's diet, and the length of time such diet has been in force: (2) the condition of the mouth and throat as to the presence of pyorrhœa, or other inflammatory lesions; (3) the presence of a pathological process in the intestinal or respiratory tract; (4) whether there is diarrhœa, constipation, or normal action; (5) the influence of purgatives; (6) the time interval between the collection of the specimen from the patient and the bacteriological examination; (7) whether contamination of the specimen of fæces with urine, or from unclean vessels, or exposure to atmospheric conditions, especially in the tropics, has occurred.

[1] Department of Scientific and Industrial Research. H.M. Stationery Office. 8s. 6d.

[1] Deutsche med. Wochenschrift, Sept. 28th, 1923.
[2] Johns Hopkins Hospital Report, vol. ix.

It is largely due to the lack of knowledge of the bacterial flora of the intestinal tract in man, under normal and abnormal conditions, and of the numerous circumstances which influence the flora, more especially dietetics, that common errors are so often repeated and inaccurate deductions made. To quote but one example, it is not an uncommon occurrence for a patient, whose diet consists of cow's milk, to be treated with a streptococcal vaccine made from the fæces. G. B. Morris, R. L. Porter, and K. F. Meyer [2] lay stress on the fact that the fæcal flora of a child fed on cow's milk, although not suffering from any intestinal disturbance, or symptoms of intoxication, may resemble the putrefactive stool, due to direct milk contamination. As a result of elaborate investigations, these authors considered it to be an established fact that the microbic flora of the intestinal canal is in direct relationship to the diet of the host, and that the absence of carbohydrates in a diet produces a predominance of proteolytic bacteria, resulting in putrefactive stools and symptoms of intoxication from intestinal absorption. In adults the importance of chronic intestinal putrefaction has led to various methods of treatment being employed, such as vaccine therapy, intestinal antiseptics, removal of the colon, and the one-time popular remedy of implanting antagonistic organisms, such as *B. bulgaricus*. P. R. Cannon [3] points out, however, that observations have shown how impossible it is to implant *B. bulgaricus* in the intestinal tract, since the organism is apparently not an inhabitant of the normal intestine and cannot adapt itself to its new environment. Cannon's observations agree with those of other observers who claim that the reduction of intestinal putrefaction can be effected by the substitution of carbohydrates in the diet for proteins. The controlling force of the intestinal bacteria in the normal intestine is the food which is consumed. Prof. Dudgeon fully endorsed a statement by Torrey [4] that milk and a high casein diet stimulate a vigorous growth of saprophytic streptococci and enterococci. It would be well for this fact to be more fully appreciated by those who make use of streptococcal vaccines prepared from the fæces.

THE LIMITATIONS OF AVAILABLE INFORMATION ON CLIMATOLOGY.

A DETAILED account of British climatology is being prepared by the Meteorological Office of the Air Ministry. Section IV. of this work, which has appeared,[5] consists of two parts: (A) Range of Variation of Temperature and Rainfall; and (B) Frequency Tables for Hail, Thunder, Snow, Snow-lying, and Ground Frost. The information covers varying periods terminating with the year 1921 and concerns 30 selected places ranging from the Shetland Islands to Scilly, from Dublin to Yarmouth. The range of information given in (A) with regard to any special places is wide. We are told, for example, the highest temperature reached on a normal day in, say, January; in which January, over a term of years, were there (*a*) the hottest, (*b*) the coldest days on the average; what was the lowest temperature reached in the normal January night; in which January were the nights (*a*) warmest, (*b*) coldest; what January was (*a*) the warmest, (*b*) the coldest on the whole, and what was (*a*) the highest, (*b*) the lowest temperature recorded in January since 1876. Similar information is given with regard to the rainfall. In (B) we find details concerning the highest number of days for each calendar month, with snow, hail, and thunder; also the frequency of winters (1881–1915) with no snow, with 1–10 days snow, with 11–20 days snow, and so on. On this mass of detail in the contents, which may well prove of interest to holiday-makers, agriculturists, and invalids, some comments may be made from the medical standpoint. It must nowadays be admitted that thermometric readings alone are quite inadequate as a guide to the effects of atmospheric conditions upon the human body. A doctor would be unable to advise a patient correctly as to a suitable residence as regards sensations of heat and cold unless he knew as much about the prevailing winds as about the temperature of resorts. Temperature is only one of the important factors concerned, movement of air being equally, if not more, important. The ordinary thermometer being unaffected by wind, is quite unable to indicate the changes of sensation produced by movement of air, and though indoor conditions may be indicated fairly by its readings a kata-thermometer which is affected by both temperature and wind is needed for the estimation of outdoor conditions. While the kata-thermometer directly estimates the cooling power this may also be calculated indirectly from the velocity of the wind and the dry bulb temperature. From information already collected it is probable that cooling powers could be worked out. At any rate kata-thermometer cooling powers should also be estimated in the future, and in this way information of real value to doctors and invalids may be forthcoming; a suitable self-recording kata-thermometer (Schuster's) is now obtainable. It is well known that, in industry, the wet-bulb temperature is a better guide to comfort than the dry-bulb. Again, at low temperatures moisture of the air increases the sensation of chilliness. A doctor must then know at least the wet-bulb temperature, and the cooling power before his advice may be of much value to a patient. The ideal volume for the doctor would contain the hours of sunshine, the dry-bulb temperature, the wet-bulb temperature, the cooling power and the velocity of the wind.

[2] Journal of Infectious Diseases, xxv., 349–377.
[3] Loc. cit., xxix., 369–385.
[4] Jour. Med. Research, xxxix., 415.
[5] The Book of Normals of Meteorological Elements for the British Isles, for Periods ending 1915, Section IV. Meteorological Office, Air Ministry, pp. 153–220. 1923. 3s. 6d.

EPIDEMIC DIAPHRAGMATIC PARALYSIS.

Dr. G. C. Payne, epidemiologist of the Virginia Board of Health, and Dr. C. Armstrong,[1] of the United States Public Health Service, describe an epidemic of transient diaphragmatic spasm, which occurred mainly in the north-eastern part of Virginia during the summer of 1923. In practically all the areas affected the epidemic began in July, but there were a few cases in May and June. The infection appeared to be spread through families by contact. Among 17 families studied by the writers there were five cases in one, four cases in one, and three cases in two others. Children were somewhat more frequently attacked than adults. Of 27 cases under the writers' observation 15 were less than 20 years of age, and 8 were not yet 10. The epidemic was strictly confined to rural communities. Prodromal symptoms were usually absent, and the attack nearly always began suddenly with severe epigastric pain, which later extended to one or both sides of the lower part of the thorax. Respiration was very difficult, the rate in some cases being 60 a minute. The temperature rose in nearly all cases at the onset, and soon reached the maximum, which ranged from 101° to 105° F. The pain was intermittent, was most severe at the onset or soon after, and was increased by active movements of the body. Profuse perspiration was the rule. Nausea and vomiting occurred in about one-third of the cases. Constipation was the rule. More than half the patients complained of headache, and a few of pain in the extremities or in the lumbar vertebræ. After about ten hours of severe paroxysms and dyspnœa the patient became more comfortable and the temperature fell, but sometimes it rose again, and some patients complained of weakness and slight fever for from one to three weeks after the onset. In some cases there was no return of the pain and dyspnœa, while in others the initial symptoms

[1] Journal of the American Medical Association, Sept. 1st, 1923.

recurred with decreased severity after an interval of 24 hours or more. Blood counts, which were made in 11 cases, showed no definite increase in the total number of leucocytes. The polymorphonuclears ranged from 25 to 76 per cent. In six cases the eosinophil percentage was greater than 5, the maximum being 13. The sequelæ noted were streptococcus empyema, dysentery, otitis, and endocarditis. The writers regard the outbreak as due to an infection the nature of which has not been determined. A similar epidemic which occurred in Virginia in June, 1888, was described by Dabney, who emphasised its resemblance to dengue, but regarded it as a distinct entity.

ITCHING AND TICKLING.

Prof. M. v. Frey, of Würzburg, has published[1] some new and interesting observations on the physiology of tickling and itching and the relation between the sensations of tickling and those of contact and pressure. These experiments show that the sensation of superficial tickling, that form which is discharged from the skin, is determined by the nerves of the pressure sense, while that of itching is due to the superficially placed nerves which administer to painful sensations. An appropriate method whereby the sensation of tickling may be induced by cutaneous stimuli is to draw a pig's bristle, 5 cm. in length, along the skin of the forearm at the rate of 1 cm. per second and exercising a pressure of about half a gramme in so doing. To excite the sensation of itching press a pointed bristle on the skin and maintain the pressure on one and the same spot, using a pressure of about half a gramme. The two sensations are quite distinct, as shown by the fact that the effective stimuli so far as they are of a mechanical nature have a different liminal intensity or threshold value. The mechanical stimulus exciting the sensation of itching cannot be diminished much under half a gramme, if it is to be effective, while sensation of tickling can be induced when the pressure is reduced even to one-twentieth of a gramme. The tickling sensation, such as is produced by the bending of a hair or deformation in the region of a pressure spot, rapidly fades or subsides, a phenomenon characteristic of the terminations of pressure nerves. To maintain the sensation of tickling, the stimulus must be carried along the skin. For itching, however, the stimulus must be maintained at one and the same spot and the sensation once induced remains for a long time at the affected spot. Moreover, the reaction time for tickling is very constant and is about 0·15 second, while the corresponding time for itching varies with the spot stimulated and is relatively long, being seldom less than one second, and may be even seven times longer than that for tickling. Different also are the after duration and the reflexes associated with the two sensations. The itching sensation in general outlasts the duration of the stimulus, which can hardly be said of tickling excited by weak stimuli. The reflex associated with itching is the scratch reflex, that with tickling is shuddering or even shivering, and not laughter as is so generally assumed. The correspondence between the threshold stimulus for tickling and contact, the difference in the threshold between surfaces provided with hairs or hairless parts, and the marked increase of the threshold value after removal of the hairs—the increase may be tenfold—also serve to strengthen the contrast. If the pain nerves present in the epidermis be paralysed by cataphoresis, it can be shown that tickling is not due to excitation of these nerves, for the sensation can be evoked after they are paralysed. In spite of the distinctive characters of the two sensations, confusion and admixture are not infrequent, and long-continued titillation may give rise to results which are very complex and may be associated with the sensation of itching. There is a close relation between the sensation of tickling and that of contact, and both are readily elicited by touching the hairs; both are very fugitive when the stimulus remains applied. Both sensations tend to extend beyond the spot stimulated, and both lead to reflex vascular effects. The physiological effects in both processes are not essentially different, and the psychological effect is chiefly dependent on the direction of the attention to the phenomena. If this is directed to the external stimulus, the sensation of contact arises, but if to the part tickled, the sensation of tickling arises. The author comes to the conclusion that the sensations of contact, pressure, and tickling are modifications of one modality and are not due to qualitatively different receptors.

[1] Zeitschr. f. Biol., vol. lxxviii.; and Skand. Arch. f. Physiolog., vol. xliii., 1923.

DUODENAL FEEDING.

Prof. Max Einhorn,[1] of New York, reports satisfactory results on 11 cases of gastric and duodenal ulcers treated with duodenal feeding, by means of a duodenal tube. He only includes those cases in which a definite and persistent deformity of the stomach in the shape of a notch at the site of the lesion was demonstrated by the X rays. The patient was fed through a duodenal tube for two to three weeks, at the end of which time the notch was found to have either completely disappeared or to have considerably diminished in size, while the patients expressed themselves as feeling well. In Prof. Einhorn's opinion, these cases should be given a chance of healing by his method before they are subjected to operation, although he admits that there are some cases in which there is good ground to justify immediate operation. We should like to have further reports of his cases, after a prolonged period of observation, to ascertain whether they tend to relapse, as it is well known that most gastric ulcers show signs of periodic activity, with free intervals between the attacks. We also feel that there may be grave danger of missing an early carcinoma in subjecting all cases to medical treatment, when X rays show a definite deformity.

[1] Deutsche med. Wochenschrift, Oct. 26th, 1923.

AN UNFORTUNATE ERROR.

A MISCONCEPTION has arisen under which, we are informed, medical women have been told that they were not expected at THE LANCET Centenary Dinner at the Hotel Victoria on Nov. 29th. This is an entire mistake. Any member of the medical profession can be present at the dinner, and already many medical women have signified their intention of being present.

THE veteran Pridgin Teale died at his residence, Headingley, Leeds, on Tuesday last, at the advanced age of 92.

WE regret to announce the death, in his eighty-fourth year, of Emeritus Professor D. W. Finlay, late of Aberdeen University, at Helensburgh, Dumbartonshire, on Nov. 4th.

SMALL-POX IN ENGLAND AND WALES.—During the week ended Nov. 3rd, 35 new cases of small-pox were reported in England and Wales from the following areas: Derbyshire 3 (Chesterfield 2, Shardlow R.D. 1); Durham 2 (Gateshead 1, Southwick-on-Wear 1); Gloucestershire 7 (Gloucester 6, "including 2 cases of chicken-pox re-diagnosed as small-pox," East Dean 1); Notts 16 (Hucknall 15, Basford R.D. 1); Yorks West Riding 7 (Adwick-le-Street).

MANCHESTER HOSPITAL FUND.—During the last year over £73,000 was subscribed by three-quarters of a million contributors, a capital sum sufficient to enable 13 Manchester and Salford hospitals to be left free of debt. The Duke and Duchess of York made a special visit to the city to receive and hand over to the Hospital Fund this large cheque. The Duke congratulated the Lord Mayor on the inception of a scheme so successful, which would go far to prevent curtailment of the work in the wide field covered by the hospitals of Manchester and Salford.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

XLV.

THE TREATMENT OF CŒLIAC DISEASE.

THE modern treatment of cœliac disease, although not apparently curative, is very successful. It is able to change a perpetually ailing, fretful, and unattractive child into one who is free of all symptoms, happy and lovable. There are few more grateful women than the mothers of the severer cœliac cases which have been recognised and treated. Yet, although the disorder has been known for more than 30 years and is by no means uncommon, much unnecessary suffering is frequently caused by its passing undiagnosed.

Recognition of Cœliac Disease.

The essence of the disorder is a failure properly to absorb the fat of the food. Although apparently efficiently split by the pancreatic juice, a large excess of the dietetic fat remains unabsorbed. On this disability rest all the other symptoms. The cardinal features of the disease are: (1) excess of fat in the stools; (2) enlargement of the abdomen without signs of organic disease; (3) retardation of physical growth and development; (4) anorexia, often of the severest grade; (5) fever, either low and persistent or high and transient. Less common complications are tetany, convulsions, "alimentary" œdema, and, I think, megalocolon with visible peristalsis. "Late" rickets is rare.

Course of Disease.—It is not yet possible to say when the disorder begins and ends, for we find that even in the absence of symptoms fat-absorption remains below the normal. But the times of the onset and termination of symptoms are known. Occasionally the first symptoms, the passage of colourless stools, will appear quite suddenly towards the end of the first year of life, usually in association with teething; but more commonly pale diarrhœa (*diarrhœa alba*) is seen for the first time towards the end of the second year. From this time onward, in the absence of treatment, the symptoms already enumerated will be seen for many years. Towards the later years (10 or 12) of childhood, even in the absence of treatment, some improvement in fat-absorption seems to occur, but in the most quiescent stages analysis of the stools will show that a normal condition has not been reached. The lack of growth leads to considerable stunting and in severe cases to retarded sexual development (cœliac infantilism). Nevertheless growth continues for many years, and under treatment a normal average height is eventually reached. Whether in adult life fat-absorption ever becomes entirely normal I do not know, but certainly the patients are ultimately able to keep well on an ordinary diet. Except for attacks of severe diarrhœa in the early years, the disease is not dangerous to life; neither does it predispose towards tuberculosis.

Diarrhœic Type.—This is the common classical type described by Gee in 1888. The characteristic feature is the *diarrhœa alba*, the stools being very large, unformed, pale, greasy, and extremely offensive. In frequency they vary from 2 or 3 up to 10 or 12 daily during bouts of diarrhœa. On analysis they show a great excess of fat, the dried stool containing 30–80 per cent. of fat. In these pale stools the bulk of the fat is passed as fatty acid crystals; bile-pigment is not absent from the stools, but it is masked by the excess of fatty acids. In this type of the disease the other symptoms are severe and the stunting of growth most noticeable. Mentally the children are in no way deficient, but are usually neurotic, hysterical, introspective, negative, and "difficult." It is noteworthy that even in this severe form it is seldom recognised at home that it is the fats of the diet which disagree. Mothers think in terms of pastry, cream, green apples, and so on, rather than in those of protein, fat, and carbohydrate. Occasionally, however, one is told that cod-liver oil, with which the children are often liberally dosed in quiescent intervals, "does not seem to suit."

Non-diarrhœic Type.[1]—This is the same condition in milder form. It is much less easily recognised than the former type. A case may conform to this type throughout its course, but it is chiefly seen in the quiescent or convalescent stages of the classical type. It differs from the diarrhœic type in two particulars: (1) The stool, although larger than normal, is neither pale nor unformed nor offensive; it is formed and coloured, and may be dark, hard, and constipated. Yet it contains a considerable excess of fat (30–50 per cent.), but the bulk of the fat, instead of being in the form of fatty acid which masks the bile-pigment, is present in the form of soap which takes up the colour. (2) The symptoms of abdominal enlargement, lack of growth, anorexia, &c., are milder than in the diarrhœic type or stages.

Management of the Case.

General Scheme.—The principle of the treatment is to work out a diet containing the optimum amount of fat—that is to say, one on which there will be satisfactory growth and a complete absence of symptoms. As this will certainly contain less fat than an ordinary diet, parents should be warned that the child is not being starved and that extra fat, if given, may lead to loss of appetite or worse upsets. As the child improves on the low-fat diet, the growth of its appetite will enable more food to be given; this should be supplied in the form of extra non-fatty proteins.

Fatty Foods.—The chief foods in a child's diet which are rich in fat are milk, butter, dripping, cream, meat-fat, gravies, milk and suet puddings. Many preparations prescribed for children contain much fat—for example, cod-liver oil preparations, virol, &c. Liquid paraffin appears in the stools as neutral (unchanged) fat.

Detailed Treatment.—Leaving until later cases first seen when in an attack of severe diarrhœa, the treatment of the ordinary chronic case may be undertaken in the following stages:—

1. Before starting treatment note the amount of fatty food in the diet, the characters of the stool, and symptoms. If possible have an analysis made of the stool for fat before altering the diet. These points serve to give a rough standard of a diet too fatty for the particular case. The child should be weighed every week or so, and particularly before any alteration in the diet. Its height should be measured every three months. The mother should keep notes of these points and of the diet ordered and its alterations.

2. Change the diet abruptly on to one low in fat. The following dietary may be used as a start. For very young children it will probably be rather too rich in fat; for older cases it may be unduly strict.

Breakfast.—Plasmon cornflour made with skimmed milk; fish, egg, lean tongue; toast or bread; no butter; syrup, jelly, jam; cup of skimmed milk flavoured with Schweitzer's cocoatina or tea, sugar. 11 A.M. (if desired) bovril made with water, rusk or dry biscuit.

Dinner.—Fish; lean meat, chicken, rabbit; bovril in water to replace gravy; potato and second vegetable without sauce. Pudding: jellies, stewed fruit, rice boiled in water, sponge-cake puddings; alternate or every third day, plasmon puddings or milk puddings made with skimmed milk, or steamed pudding containing a trace of butter. Fruit, except bananas and nuts. Drink: water.

Tea.—Bread, rusks or dry biscuit with syrup, jelly, or jam; no butter; sponge-fingers; a little lettuce or watercress; meringues (cases only); tea or cocoatina made with skimmed milk; home-made buns or cakes containing a minimum of butter.

Supper.—Sponge-fingers, sandwiches of raw meat pulp, of watercress, of tongue, or tomato; plasmon pudding made with skimmed milk. Drink: skimmed milk with or without plasmon, or cocoatina or bovril.

Note.—(1) Skimmed milk. Unless machine-skimmed milk can be bought the skimming should be done by heating the milk at 200° F. for 20 minutes and then setting aside

[1] THE LANCET, 1923, i., 72.

for three hours. All the cream can then be carefully removed. Done properly the milk should have a blue look and contain under 1 per cent. of fat. A desiccated skimmed milk (Lyons's "Kookal") may be used for emergencies. (2) Plasmon is a powder made of casein in a soluble form. It is stated to contain only 0·7 per cent. of fat. Plasmon arrowroot, blanc-mange, cornflour, and custard powders are said to contain no added fat; the plasmon cocoa, chocolate, and biscuits contain added fat and are unsuitable. Plasmon oats contain a large percentage of plasmon, but porridge is seldom suitable for cœliac cases. (3) Schweitzer's cocoatina is advertised as being fat-free. Ordinary cocoas, of course, contain fat.

3. When the child has been on this diet for two or three weeks reconsider the position. If the diet is correct the stools should have become normal in size, the abdomen smaller (but not normal), the colon no longer distended with gas, the tongue clean, and, most important of all, the appetite keener. The rule at this stage, as at others in the treatment, is to reduce the fats sufficiently to get the child hungry and eating well. Finally, an analysis of the fæces will show that the percentage of fat in them has dropped, probably to between 20 and 30 per cent. This figure, which usually means that the child is safe from any recrudescence of active symptoms, is diagnostic of the disease: on such a low-fat diet the percentage should be far lower.

4. When the appetite has improved increase the non-fatty protein in the dietary. Now the child should begin to increase in weight and height, and such a diet may be kept on for months; indeed, it forms the basis of the diet for years.

5. When the child is thoroughly stable and doing well, experimental tests of giving more fat may be made. These must not be hurried and must be most carefully watched. A little extra fat may be tried every third day; the most welcome relaxation is "scrapes" of butter, or anchovy-paste or potted meat for breakfast. Other tests may be easily planned. It must be remembered that many of these children are extraordinarily sensitive to fat, one meal containing too much fat, as, for instance, a greasy gravy, is quite enough to upset them. Also, it by no means follows that what a child can take every third day can be tolerated daily. The signs of disagreement will be distension of the colon, coated tongue, loss of appetite, irritability, and perhaps a foul stool.

6. *Drugs.*—An alkaline mixture, such as rhubarb and soda, with or without bromide, is very useful, and may be continued regularly. Bile salts are often of value, particularly in the diarrhœic cases. They lead to an increased absorption of fat, and so allow more fat to be given in the diet.[2] They should be given for periods at a time; I usually order them for alternate months so that their influence can be tested. They are best administered in the form of the "kapsols" as made by Allen and Hanburys, each gelatin capsule containing ½ gr. each of sodium taurocholate and glycocholate. One capsule, or in older children two, should be given after each meal with the alkaline mixture. I have never seen any harm come of their use.

For the stunting of the growth I have not found any benefit from the use of thyroid or pituitary extracts. Correct dieting is the remedy for stopped growth. This suggests that the lack of growth is not merely the effect of fat-deprivation, but is largely the result of the toxæmia produced by an excess of unabsorbed fat.

Acute Diarrhœic Attacks.—In this condition it is probable that the excess of fatty acid in the bowel has set up an enteritis. These attacks are chiefly seen in the youngest patients and should not occur under treatment. For them all fat must be cut out of the diet temporarily. Water should be given, then clear whey or plasmon in water until skimmed milk can be allowed. Bismuth and opium mixtures and colonic irrigation may be ordered.

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[2] THE LANCET, 1920, ii., 894.

Special Articles.

SOME POINTS ON NEPHRITIS IN GENERAL PRACTICE.

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By the use of modern facilities it may safely be said that the presence or absence of nephritis in any given subject can be ascertained with certainty; indeed, it is generally not a very difficult problem to determine with reasonable accuracy to what extent the renal tissue is damaged and what the probable prognosis is. All this necessitates the use of a laboratory and the carrying out of certain tests, some of which require technical knowledge and a great deal of time. On the other hand, the very simple procedure of estimating the urea of the urine after giving a dose of urea by the mouth—the so-called urea-concentration test—frequently affords all the information that is required. It is essential, however, that certain factors associated with this test should be clearly understood, otherwise the interpretation of the results obtained may be difficult and even misleading. In this respect the relation of blood-urea concentration to nephritis and other conditions is very important. Within the last few years much stress has been laid on the necessity for ascertaining the amount of urea in the blood in all cases of nephritis, but it is now clear that, in some patients, blood-urea alone may afford little or no clue to the condition of the kidneys.

Blood-urea and Nephritis.

The amount of urea found in the blood of the normal healthy individual on an average diet is generally given as 20 to 40 mg. per 100 c.cm. blood. In a general way, experience shows that the younger the individual the nearer does the value approach to 20 mg. per 100 c.cm., while in older subjects there is a tendency for the upper limit of 40 mg. per 100 c.cm. to be reached or exceeded. These figures are by no means very constant, especially in old people, and it is not uncommon to find a blood-urea of 60 mg. or even more per 100 c.cm. blood in an elderly person in whom the kidneys are apparently fairly normal for his age. Thus, the presence of a blood-urea of 60 mg. per 100 c.cm. in a young person of 18 or 20 would be very significant, while a similar concentration in a patient aged 70 might be of little or no importance. To be of value in clinical work the age of the patient must be taken into account when considering the value of a blood-urea concentration. The part played by diet in this connexion is so obvious as to need no further discussion. It should always be remembered that a renal lesion must be fairly extensive before it will result in a raised blood-urea, for it is common knowledge that the removal of one kidney, for instance, with the consequent reduction of renal tissue to one-half the normal, does not cause an increase in blood-urea. Probably, nearly three-quarters of the kidney substance must be thrown out of action before the defect is indicated by retention of nitrogenous products in the blood. From this it is obvious that examination of the blood affords little or no help in early stages of nephritis where the lesion is as yet a comparatively slight one. Indeed, it is possible to have a fairly severe attack of acute nephritis without any increase of blood-urea. When the blood-urea is very definitely raised as the result of a renal lesion, that lesion must be a severe one, and a high blood-urea in such cases really indicates that the greater part of the renal tissue is either temporarily or permanently out of action. In mild cases of nephritis, estimation of blood-urea is therefore of little value, for it may be within the normal range

or even lower. In severe nephritis, no doubt, the amount of retention of nitrogenous products such as urea serves as a valuable guide as to the extent, and particularly as to the progress, of the lesion, but under certain conditions even a low blood-urea value does not necessarily exclude renal involvement. In patients bordering on uræmia, and with a high blood-urea content, it is frequently possible by a modification of diet to reduce the blood-urea to the normal limit. Such patients, however, do not appear to improve as the result of the lowering of nitrogenous waste products in the blood, and they frequently die in uræmia, despite all dietetic precautions. From this it would appear that urea in the blood plays little or no part as a causative factor in the production of uræmia. While all this is generally understood, it is frequently forgotten that a high blood-urea may be produced by causes acting outside the kidneys altogether. It is essential that this fact should be remembered when dealing with certain cases of nephritis, otherwise grave mistakes may be made as to the condition present and the probable prognosis.

Importance of Blood-urea in Severe Acute Nephritis.

In one class of case—that of severe protracted acute or subacute nephritis—the real condition of the kidneys can be more satisfactorily ascertained by following the changes in blood-urea than by any other means. Frequently such patients are very ill for a few months after the original acute attack, and the general clinical condition may be so bad as to give little hope for recovery. Œdema and ascites are often prominent features, and dyspnœa, bronchial catarrh and gastro-intestinal symptoms may be much in evidence. After some time these patients frequently appear to take a turn for the better, this change being coincident with a definite lessening of the œdema. In such patients the clinical picture may give an entirely wrong impression as to the prognosis, for instead of improving the renal lesion may be progressing rapidly, and the outlook may be quite hopeless. In the majority of cases of protracted acute nephritis with severe œdema there is a tendency for the œdema to diminish as sclerotic changes progress in the kidney. Since many of the patient's symptoms, such as vomiting and dyspnœa, are apparently associated with the œdema, these symptoms may cease with the subsidence of the œdema, and the patient may appear to be recovering. Frequently, however, at this point the renal condition is becoming rapidly worse, and the superficial clinical evidence may be entirely misleading. Instead of the increased blood pressure becoming lower with the diminution of the œdema it still persists at a more or less high level, and this in itself is suspicious though not necessarily of grave significance.

In this type of case estimations of blood-urea at intervals of a week or 10 days give invaluable information. Whatever the clinical condition of the patient, a steady increase of the blood-urea indicates a hopeless prognosis, and I have not yet seen a single case in which a fatal issue did not supervene when the blood-urea was steadily rising, or was maintained at a high level for a considerable time. To some extent these patients are in somewhat the same position as the subjects of subacute infective endocarditis. Frequently, in the latter condition, the symptoms improve during apyrexial periods to such an extent that superficially the patient appears to be on the way to recovery, yet a fatal termination always ensues, and generally within a few months. It is just the same with certain cases of acute nephritis that do not clear up. Though the clinical condition frequently suggests improvement, the result is never in question. Some of these, of course, may have acute disease grafted on to a chronic lesion, but in others this is almost certainly not the case.

On the other hand, however severe the symptoms in such cases, it is found that when the blood-urea comes down steadily the outlook is good, and the patient gradually recovers. In these severe, more or less acute, cases frequent estimations of blood-urea will give more information than can be obtained by any clinical means, and often prevent gross mistakes in prognosis.

High Blood-urea with Healthy Kidneys.

Various factors will produce a considerable increase in blood-urea, even when the kidneys are quite normal. Abstention from fluid for a comparatively short time, especially in hot weather, may result in raising the blood-urea very considerably, so that a value of 60 mg. or more per 100 c.cm. blood may be found in a young healthy individual. Persistent diarrhœa will give similar results. The question of food also plays a very considerable part. Besides these factors, there are various extrarenal pathological conditions which give rise to a marked increase of blood-urea. Such conditions as cardiac disease, acute or subacute obstruction of the intestines, pneumonia, empyema, fevers, and other pathological processes are perhaps the most prominent agents in the production of this result. In such conditions the kidneys, though perhaps implicated to some slight extent as a secondary phenomenon of the disease, may be quite efficient in the performance of their function, and cannot in any way be held responsible for the accumulation of blood-urea. This fact is frequently forgotten, and in such cases the finding of a high blood-urea is often taken as proof of the presence of a definite renal lesion. Not infrequently slight nephritis may be associated with some other lesion which gives rise to retention of urea in the blood. This is seen, for instance, in subjects in whom both cardiac and renal lesions occur together. In these patients it is not uncommon to find a comparatively high blood-urea, while other renal tests indicate that the kidneys are but very slightly involved. Here the high blood-urea would seem to indicate that the kidney condition was very bad, but the other tests suggest the very opposite.

How are we to explain such anomalous results? The fact is that the high blood-urea is really dependent on the cardiac condition and not on the kidneys at all; from the blood-urea alone it would, of course, be impossible to say whether the chief defect lay in the renal or cardiac mechanism, but the divergence between the result of the blood-urea test and other renal tests is at once proof that the high blood-urea cannot be dependent on renal deficiency. Frequently, with cardiac improvement, the blood-urea becomes normal in such patients, and on subsequent examination all the tests indicate that the kidneys are satisfactory. On the whole, we are forced to the conclusion that a knowledge of the blood-urea content does not help us very much in forming an opinion as to the condition of the kidney unless we are certain from other symptoms or tests that the case is really one of nephritis. If we do not know this, we must always consider carefully whether high blood-urea is due to nephritis or to some extrarenal condition. Even when associated with albuminuria it is very unsafe to assume, without definite evidence, that a renal lesion is present, and the lack of appreciation of this simple fact occasionally results in tragedy. As an instance of this I may refer briefly to the case of a patient who was suffering from albuminuria and began to show vague symptoms which his medical adviser thought might be due to nephritis. A blood-urea estimation was carried out, when a concentration of 95 mg. per 100 c.cm. blood was found. The combination of albuminuria and high blood-urea satisfied his medical attendant that the case was one of chronic nephritis with uræmic symptoms. Some time afterwards examination of the urine of this patient revealed the fact that the amount of urea present was nearly 3 per cent. Despite all the apparent evidence that the patient was suffering from uræmia, it was now necessary to reconsider the diagnosis, for a urine containing this large amount of urea definitely and absolutely excluded the possibility of uræmia. Further examination showed the presence of an abdominal abscess which, as the subsequent history showed, was the cause of the high blood-urea.

In another case almost exactly the same thing happened. Here, again, uræmia was at first diagnosed but later definitely excluded by the finding of a high urea percentage in a specimen of urine. Further examination showed that the patient was suffering from an empyema which was responsible for the diagnosis of uræmia. Unfortunately, the correct diagnosis was made too late, and the original diagnosis of nephritis and uræmia cost this patient her life. Such mistakes have very frequently been made, simply because it is not remembered that the presence of albuminuria and high blood-urea do not necessarily indicate that the symptoms are dependent on kidney lesions. In all doubtful cases a sample of the urine should be taken and the urea estimated. If the kidneys are efficient the percentage of urea in the urine will be fairly high—say, somewhere in the region of 2·5 to 3·5 per cent., or even more. Indeed, if the concentration of urinary urea reaches 2 per cent. uræmia may be safely excluded.

In severe nephritis, on the other hand, the urine contains a comparatively low percentage of urea, generally in the neighbourhood of about 1 per cent. The accumulation of urea in the blood in nephritis depends on the fact that the kidney has to a large extent lost the power of concentrating urea in the urine, and so it follows that the urine passed by a uræmic patient must be deficient in concentration of urea. When the increase of blood-urea is dependent on some extrarenal cause, the healthy kidney has to deal with a large "head" of urea in the blood, and will consequently secrete a urine containing a high percentage of urea. If we have a patient presenting apparently uræmic symptoms with albuminuria and a high blood-urea, it may be quite impossible to say whether the condition is one of uræmia or not if we restrict ourselves to the ordinary clinical evidence. If we now examine a sample of urine for urea and find that the urea percentage is, say, 2·5 per cent. or more, we may take it for granted that the symptoms are not dependent on renal disease. In such a patient further investigation will generally reveal some other cause for the condition. If, however, the urine contains only 1 per cent. of urea or so it may be taken for granted that the kidneys are very inefficient and that uræmia is present. For differentiating uræmia from many conditions which simulate it the most reliable measure that we possess is the estimation of the urea in the urine. This simple process can be carried out in five minutes by the busiest practitioner; it requires no practice or skill in chemical manipulation, and has the advantage that it affords more definite evidence as to the condition of the kidneys than do any of the more elaborate tests. This statement is based on experience with very many thousands of cases, and while it must be admitted that no single test will suffice in all cases of renal involvement, yet there are many patients in whom this test will provide all the information that can be required.

If it is known that a high blood-urea is present examination of an ordinary sample of urine suffices; if the blood-urea concentration is unknown, it is necessary, in suspected cases, to give a large dose of urea by mouth, so as to make certain beforehand that the kidneys will have a large "head" of urea to work on. A full description of this urea-concentration test is given in my book[1] on renal disease, and only the shortest reference to it need be given here. The patient is given about 15 g. of urea dissolved in a couple of ounces of water, the bladder being emptied immediately after taking the urea. The total contents of the bladder are then voided at intervals of one hour and two hours after the urea is taken, and the percentage of urea in the specimens ascertained. One very important feature in the use of the test is the necessity for preventing the patient having too much fluid in the system, for under these circumstances the urea may act as a diuretic, and so much water may be excreted that the actual percentage of urea may not at all represent the maximum concentrating power of the kidney. As a rule, not more than 120 c.cm. of urine per hour should be passed after the urea is taken. Sometimes, patients come to be examined after copious draughts of tea or other beverages, and here the results of the test may be inconclusive and difficult to interpret. By far the best results are obtained by asking the patient to take as little fluid as possible for 12 to 18 hours before the test. This is a most important precaution which has perhaps not been sufficiently emphasised in the past, though I have been accustomed to carry it out for several years. When this is done, experience of a very large number of patients shows that the urea-concentration test is the most reliable method we have for the estimation of renal function. It also possesses the advantage that only very small amounts of urine are required for analysis—a most important consideration in many cases of genito-urinary surgery where samples have to be obtained from the ureters. Obviously, neither this test nor any other is capable of indicating whether a single kidney is diseased unless ureteric specimens are taken, for one kidney will secrete a urine of exactly the same concentration as the secretion derived from both kidneys. While it may be difficult to carry out the more elaborate tests for renal function in general practice, this urea-concentration test should be used by every practitioner because of its extreme simplicity and usefulness. This test, combined with an examination of the urine for protein, casts, blood, and other elements will, in the great majority of cases, suffice to determine the condition of the kidneys. Estimation of blood-urea will help to complete the picture, but this estimation is frequently unnecessary, and, when done, must be very carefully considered in the light of the points already mentioned.

Nephritis and Arterio-sclerosis.

The comparative frequency of a general breakdown in health in middle-aged business men of more or less free and active habits is quite noteworthy. Such patients are often found to suffer from marked cardio-vascular changes. The arteries may be somewhat hard, the blood pressure raised, and the heart considerably enlarged, while examination of the urine shows the presence of protein and often of some casts. The diagnosis frequently made in such a patient is chronic nephritis with secondary cardio-vascular involvement, but it is an interesting feature that many of these individuals possess quite satisfactory kidneys. Experience shows that, to a great extent, the outlook in patients suffering from these cardio-vascular changes depends largely on the condition of the kidneys, for when the kidneys are markedly involved and cardiac and vascular changes are present as well, then it may be said at once that the outlook is hopeless. Many of these patients die within a year. On the other hand, when the kidneys are found to be functioning well, the outlook is, as a rule, not nearly so hopeless, and indeed may be reasonably good. In cases of this nature a complete investigation of renal function should be carried out and the prognosis based largely on the results of this examination. Here, however, a word of warning is necessary, for it is often impossible to say from the result of one examination what the probable outlook is. Renal efficiency tests will indicate the condition of the kidney at the time the tests are done, but are quite incapable of affording any clue as to the progressiveness of the disease. If possible, therefore, it is best to defer giving an opinion as to prognosis until the patient is again examined a few months later. If, on the second examination, the results of the tests are worse than formerly, then the prognosis is decidedly bad, since the indications are that a rapidly progressive lesion is at work. If the tests show the same or better results than were obtained at the previous examination, then a correspondingly good prognosis may be given, provided the cardiac condition itself is not getting much worse. Naturally, such possible accidents as a cerebral hæmorrhage or cerebral infarct must be taken into account. I have, however,

[1] Modern Methods in the Diagnosis and Treatment of Renal Disease. Constable and Co., London.

been struck by the fact that patients, even those suffering from marked arterio-sclerosis and cardiac change, often live for many years when the kidneys are not markedly involved.

The Relation of Albuminuria to Nephritis.

The days are now passed when albuminuria was generally taken as a fairly definite indication of renal disease, but it is not yet fully realised that the presence of some protein in the urine is a common condition, while nephritis, on the whole, is a comparatively rare disease. There is a good deal of evidence, chiefly based on the results of examination of soldiers in the late war, that from 3 to 5 per cent. of healthy individuals show some degree of albuminuria. The presence of protein in the urine cannot therefore per se be taken as evidence of nephritis. The appearance of albuminuria in young people under the age of 20 or so—the so-called functional or adolescent albuminuria—is now accepted as a definite entity having no relation whatever to renal disease, but it is not so well known that albuminuria is, perhaps, nearly equally common in adults and elderly people whose kidneys are quite normal for their age. Even the presence of a few hyaline casts is not necessarily of much significance, so that examination of the urine in such cases is not very helpful. Again, it is quite certain that the albuminuria associated with a definite attack of acute nephritis may persist through life, and yet the kidneys may show no evidence of deficient function. It is, therefore, not good practice to diagnose chronic nephritis in an individual with albuminuria simply because the albuminuria is associated with a history of acute nephritis many years before. Certain of these subjects are the victims of sclerosed patches in the renal substance, but frequently no signs of progressive disease can be ascertained, and on testing it may be found that the kidneys are functioning excellently. It is equally true that the urine may be quite free from protein in chronic nephritis of all grades of severity; indeed, it is not uncommon to see a patient dying from uræmia without any protein having been found in the urine.

In the routine examination of several thousands of patients suffering from the effects of war nephritis nearly 5 per cent. showed very definite evidence of chronic nephritis without any albuminuria. By clinical means alone it is frequently quite impossible to say whether or not albuminuria indicates the presence of nephritis, and the question at once arises whether it is possible to do this by means sufficiently simple to be employed by the practitioner who does not possess special facilities. In many cases the question can be answered by the use of the urea-concentration test as fully as it is possible to answer it by the most complicated tests. If, for instance, the urine is found to contain 3 to 4 per cent. of urea, as is often the case after the test is carried out, it may be taken for granted that all other tests will simply corroborate this one, and that as far as it is possible to say by any means at our disposal to-day, the kidneys are efficient. Of course, no test that has ever been evolved can give an indication of very early slight pathological changes in the kidneys, but the urea-concentration test probably approaches more nearly to this ideal than does any other test, since its basic principle depends on giving the kidneys more work to do and ascertaining how they can perform this work. In other words, it is somewhat similar to the exercise test in cardiac disease, and quite as simple. In conjunction with the clinical evidence this urea test will frequently help to settle quite definitely whether a patient with albuminuria has defective kidneys or not.

Treatment of Functional Albuminuria.

When the medical attendant is satisfied that a patient with albuminuria is not suffering from renal disease, it frequently becomes necessary to endeavour to stop the albuminuria. It is unfortunate that many of our public bodies who examine youths for entrance to various Services very often refuse to admit patients suffering from albuminuria, even though examination shows that the condition is of no importance. Various methods have been adopted with a view to getting rid of the condition, but in my experience the simple method of keeping the patient in bed, or at any rate at rest, for a day or two, and giving him large doses of calcium lactate and sodium bicarbonate (say 30 gr. of each three times a day) generally removes the condition at least for a time. When this simple treatment results in a disappearance of the protein it affords additional proof that the condition in the kidneys is not an organic one. It is, of course, unfortunate that many insurance companies look askance at subjects with albuminuria, but no doubt, in the future, when the value of renal tests is more generally appreciated, this will be remedied. Even now, in some quarters, signs of a change in this direction are beginning to appear. In general, it is not a very difficult problem to decide by the use of modern methods whether a case of albuminuria is dependent on nephritis or is simply an accidental occurrence.

THE PANEL CRISIS.

National Health Insurance Funds: Trade-Union and Labour Party View.

INFORMATION concerning the general financial position under the National Health Insurance Acts is embodied in Part III. of the report lately issued by the Joint Advisory Committee on Public Health, and accepted by the Trades Union Congress General Council and the National Executive of the Labour Party. Attention is given to "various funds in connexion with National Health Insurance which, although constituted of, or earned by, moneys which primarily or actually belong to approved societies, are funds in respect of which the societies themselves are permitted no direct control, and in which societies are officially regarded as having little (if any) financial interest." These include (inter alia): (*a*) the account of moneys permanently or temporarily invested for approved societies (including reserve values redeemed) and the interest earned thereby; (*b*) the reserve suspense fund; (*c*) the unclaimed stamp sales account; (*d*) central fund; (*e*) the deposit contributors' fund; (*f*) the reserve values (apportionment) account.

(*a*) *Interest on Moneys Invested for Approved Societies.*

Up to Dec. 31st, 1922, the Ministry had earned in interest and profits about £3,000,000 over and above the sums which they had credited to societies in respect of the same period, and after deducting losses incurred of £1,300,000 on pre-war investments, there still remained over £1,600,000 clear profit. On the investments as they stood at Dec. 31st, 1922, the Ministry would continue to make a profit of about £300,000 annually after crediting societies with a lower rate of interest than the Ministry in fact earn with the societies' funds; and as additional investments amount to about 1¾ million pounds annually, this profit would constantly increase.

(*b*) *Reserve Suspense Fund.*

The main purpose of this fund is to create reserve values in a case where a person ceases to be insured otherwise than through death. Should the person re-enter insurance, a reserve value appropriate to his or her age is debited to the reserve suspense fund and credited to the society which he or she joins. A large number of persons who go out of insurance on marriage or change of status never re-enter employment, and no claim is made upon the reserve suspense fund in respect of them; the sum transferred by societies to such fund remain therein, and the fund accumulates at interest. As recently as 1920 the Government Actuary expressed the view that the surpluses in the reserve suspense fund would be such as "materially" to shorten the period fixed for the redemption of reserve values amounting to £66,000,000 if utilised for that purpose. Such surpluses may, in fact, be applied to other purposes, such as medical benefit.

(*c*) *Unclaimed Stamp Sales Account.*

From the commencement of National Health Insurance a fund of hitherto unknown dimensions has accumulated, represented by the difference in the value of health insurance stamps sold by the Government and the value of that proportion of the same stamps placed upon insurance cards surrendered to the Ministry of Health by the approved societies. The difference represents lost or spoiled stamps plus the value of stamps placed upon cards by employers whose employees either destroyed them or have never troubled to surrender them to societies. In the early days of the Act this latter feature was, no doubt, greater than it is to-day, but the income lost annually to societies generally by the apathy of their members is still considerable. Between July, 1912, and December, 1922, the difference between health stamps sold and those credited to approved societies and others approached five million pounds sterling, interest alone amounting to over £750,000.

(*d*) *Central Fund.*

This fund, admittedly over £2,000,000 at the end of 1921, was originally formed to assist approved societies who were in deficiency at valuation through no fault of their own. It was maintained by a deduction from the weekly contribution paid by the insured. In 1921, however, it was considered that the fund was large enough for its purpose and the sum theretofore taken from the insured persons' contribution for the purpose was utilised to provide the 5*d*. before referred to as a temporary addition to the approved societies' administration allowance. In 1922 one-third of the sum by which the Treasury was relieved (under the Geddes recommendations) to Dec. 31st, 1923, in respect of the grant for medical benefit, was directed by Parliament to be paid out of the central fund. Very few claims, amounting to not more than £11,000 in all, were made upon the fund at the first valuation. Possibly a slightly increased call may be made upon it at the second valuation now proceeding, but the fund accumulates at interest (about £80,000 per annum), and will in that way recover its losses.

(*e*) *Deposit Contributors' Fund.*

The position of a deposit contributor is that contributions paid by, or in respect of, him are alone available to him when in need of benefit. Like members of approved societies, however, deposit contributors drop out of insurance and are only entitled in two events (death or emigration) to receive a portion (not more than one-half) of the sum standing to their credit. Some portion, if not the whole, of the sums left in the Deposit Contributors' Fund by contributors who have ceased to be insured is transferred to the Reserve Suspense Account; up to the end of 1918 some £600,000 had been so transferred. At the end of 1920 this had been increased to £1,000,000, and at the end of 1923 will probably exceed £1,500,000.

(*f*) *Reserve Values (Apportionment) Account.*

It was assumed in 1911 that through the sinking fund provided out of the weekly contributions under the Act, and accumulated at 3 per cent. interest, would redeem—i.e., turn into actual cash—the £66,000,000 of initial reserve values credited to societies within about 20 years. The sinking fund has, however, already been raided on several occasions during the past ten years, and as a result the date of redemption has been postponed to about 1955. There would seem to be little reason for concern about the actual date of redemption so long as approved societies are credited annually with interest at 3 per cent. out of the sinking fund upon the amount of cash ultimately payable to them, and no valid objection to another postponement of the date of redemption if for the benefit of the present generation of insured persons a further sum can be set free each year for medical benefit.

Certain other funds administered centrally by the Ministry, such as the Army and Navy Insurance Fund, the Exempt Persons Fund, &c., would doubtless be found upon examination to possess surpluses over and above those required for the performance of the objects for which the funds exist. It is thus possible to find within the ambit of National Health Insurance unallocated funds constituted out of the present weekly contribution sufficient to secure not only a continuance of the existing service, but also of various improvements, at a cost which would not deprive the insured of benefit advantages which they at present possess.

A review of the financial position of National Health Insurance obtained by the British Medical Association during the course of, but independently of, this consideration of the subject, confirms the views expressed above, and will shortly be published.

Position of Approved Societies at the Second Valuation.

In this connexion the report states briefly as follows:—We ought not to pass from the region of finance without a few general observations on the position of approved societies at the second valuation. It has been clearly demonstrated to us that societies generally will have suffered severe loss during the past quinquennium as the result (*a*) of a serious reduction in the number of contributions paid owing to unemployment; (*b*) of paying minimum cash benefits to unemployed members without (at any rate for a period) receiving the contribution necessary to sustain such payments; (*c*) of bearing from April, 1922, to December, 1923, two-thirds of the Treasury grant for medical benefit which came to an end with the Geddes Report. Had those losses—due to economic conditions which have obtained for over two years and still obtain—not been present, the financial position of approved societies would undoubtedly have been rosy, for certain "profits" even now exist as a partial set-off to these losses. These profits, briefly stated, are: (1) A continued sickness incidence below the expected; (2) the added advantage derived therefrom since 1920, when the normal rates of benefit were increased 50 per cent., and since 1921, when further cash benefits were provided out of valuation surplus—both on the basis of the original expectancy as regards claims; (3) the addition to the benefit fund of the contingency money retained in hand in 1918; (4) a continuance of the improved interest-earning power of money above that anticipated in 1911; (5) gains on the maturity, sale, or exchange of wartime issues of Government stock; (6) balances unexpended of sums set apart for treatment benefits under first valuation schemes which have not been in full operation during the whole period; (7) interest earned on accruing surpluses.

Of insurance finance it may be true to say that both as regards mortality and sickness the national rates have improved since the 1911 Act was passed. The former acts adversely upon sickness insurance, the latter favourably. It would, however, appear that disablement benefit—which was expected to reach its apogee in ten years—is still on the up-grade, and the forecast of the Ryan Committee, set up by the Treasury in 1914, that this particular benefit might prove in the end more costly than was anticipated in 1911, especially as regards women, will probably be realised.

The Committee think that on the whole it is wise not to assume that societies generally will be able to give, after the second valuation, any greater benefits than they now give as the result of the first, and that to achieve this result it may be necessary to indent upon that portion of the surplus set aside by the Government valuer at the first valuation as "indisposable." The second valuation is to be performed in two sections, the smaller societies being valued as at the end of 1922 and the larger as at the end of 1923.

THE SYSTEM OF PAYMENT BY ATTENDANCE.

Without affecting the constitution of the central fund or pool out of which insurance practitioners as a whole are paid, various methods have been suggested for individual distribution. Under the Acts this is essentially a matter to be determined by the doctors

themselves in any area. The capitation method is well known, and its drawbacks, real or imagined, have been set out faithfully enough. Sir John Collie, in a letter to the press, has revived an old proposal to pay by the number of cases treated in the year. The Manchester and Salford area elected from the first to have a system of payment by attendance, and we are indebted to Dr. Stanley Hodgson for the following exposition of the psychological working of this system in Salford, where it has been most highly developed:—

It may, at first glance, be considered extraordinary that there should be any far-reaching differences in the results accruing from the payment of a professional man by a salary depending only on the number of persons for whom he accepts liability for treatment and from the payment for the actual services rendered—and still more extraordinary when it is premised that the total payment in the latter case must be the same as would be made were the former method in operation. That there are differences is well known, and the supporters of the "payment per attendance" method maintain that these differences are fundamental and indeed vital. The underlying factor is purely psychological, and in discussing the claims of the two methods there is usually a tendency to consider only remote psychological effects and ignore the immediate ones. And yet in the very great majority of persons it is the immediate effect that colours the outlook, however much the remote effect may be desired.

Capitation and Attendance Systems Contrasted.

Under a capitation system it is to the advantage of a medical practitioner to keep his clients healthy, since he will be paid the same amount whether they are sick or well. Under the attendance system it will be of equal importance to prolong illnesses, since the greater the attendance the greater the payment. These are the psychological influences supposed to bear upon the practitioner and mould his conduct towards his insured patients. It is easy to understand that advanced thinkers in the friendly society world accept these statements as cogent and valid, but it is difficult to understand how any medical man, whose profession demands that he shall use his brains, can fail to see their obvious fallacies.

Let us examine the first statement. How can a medical man keep his patients in health? Clearly he must exercise an unremitting vigilance over their every action; he must inspect every article of diet before it is cooked and again before it is consumed. He must direct the putting on and putting off of clothing; he must personally supervise the work of his client; in fact, he must combine the rôles of parent, tutor, and medical attendant. He would find it difficult to succeed were he to devote the whole of his time to *one* patient; more than one makes it at once absurd. The first premise must be altered, therefore, to the practical formula that it will be to the pecuniary advantage of a practitioner to *attend* his patients as rarely as possible. And this is the immediate psychological effect of the capitation system. Fortunately the great bulk of the medical profession realises that the practice of medicine entails the maintenance of high ideals, and the pecuniary benefit of suppressed attentions is not allowed to weigh with the individual practitioner; but, however honourably he may fulfil his obligations, he cannot avoid the mental effect of the knowledge that his income is *not* affected by the amount of work that he does.

Under the attendance system the practitioner is supposed to be benefited financially by a prolongation of illnesses. Here, again, we have to ask how this can be achieved. Frankly it is impossible. The most he could do would be to insist that the patient was not as well as he imagined himself to be and to demand prolonged convalescence. Unless the patient were to aid and abet the doctor—were, in fact, a malingerer—this method would fail for economic reasons. There remains, then, for the dishonest medical man only the method of too frequent visits and consultations. And this is a real danger in unrestricted payment per attendance. But it was foreseen at the onset by the protagonists of the attendance method, the Salford Panel Committee, who laid down a criterion of attendance. They declared a standard and that standard was the amount of attendance that an average practitioner would give to a private patient in a similar class of life, with the further condition that the attendance should satisfy the patient both in adequacy and in moderation. That is to say, the patient should feel that he wished to continue the relations of patient and doctor and was prepared to pay the bill. The committee next proceeded to express this standard in practical terms, and the first method adopted was to take the grand average of attendances on the whole of the sick by the whole of the doctors. This would mean, for example, that if in a given period, say one month, 100,000 sick had received 300,000 attendances, there would be a grand average of three attendances per patient attended. Each individual practitioner had then his own particular average ascertained for the same period, and it was found that the men fell roughly into two categories—namely, those whose average attendances were consistently moderate and those who were consistently high. As each patient was only worth a fixed sum to the pool from which payments were made, and as the grand total of attendances was far too great to allow of even a very modest fee for each item, the "above-average" practitioners were reduced to the general average before they were allowed to rank for payment. The "below-average" were not raised to the general average.

The Low-average "Bogey."

After a time it was clear to the committee that the below-average contingent contained most of the men of best repute and that they were suffering pecuniarily because the large attendances of the others raised the average cost. This necessarily followed the fact that the pool was insufficient to pay the agreed fee for visit, attendance, &c., on the whole general average. A "bogey" was then set up, based on the performances of the admittedly good low-average men, and individual averages were then reduced to this bogey. As payments were monthly a new source of inequity arose from the action, or possible action, of those who encouraged a patient to put in an appearance, if only once, in the succeeding month. Such action would tend to lower that doctor's particular average and thus give him an unjustifiable "pull" on the funds. Repetition factors were then determined—i.e., the number of times the same patient appeared on the year's monthly sheets. These factors gave valuable information and revealed the not surprising fact that the low-average attendance men had also low repetition factors. A further source of possible unfairness lay in the treatment, as regards payment, of what were termed "part-time patients," that is, patients who went to two or more doctors during the current year as contrasted with "whole-time patients" who remained under the same doctor for the whole period. Satisfactory methods were adopted for equalising these inequalities, and what is more, the whole process of adjustment was simplified so that it could be carried out automatically by unskilled clerical labour.

Mental Attitude of Practitioner Participating in Attendance System.

The mental attitude of the insurance practitioner under the attendance system as regards his patient became, therefore, the following complex. First there was the feeling of satisfaction. Every patient that he saw represented a fee. This exactly corresponded to the attitude that arose in private practice and is the most valuable adjunct to satisfactory treatment. Secondly, he would have the conflicting ideas, "If I do not give this patient what he considers sufficient attention, he may, under the right of free choice, immediately change his doctor, whereas if my attention on him is considered by the committee to be excessive I shall have done my work for nothing."

Unable to set up any artificial standard, he allows the two ideas to cancel themselves out and treats his patient just as the necessity arises. There remains to him, therefore, only the emotion of pleasure at the anticipation of reward for work done, and this emotion, colouring all his relations with his patient, is responsible for the smoothness with which the system runs and the satisfaction of those who run it. It is all a question of psychology, and the opponents of payment per attendance lamentably ignore this potent factor in all their calculations. In practice the practitioner who treats his insured patients just as he would treat them were they private patients of the same class finds that his payments remain singularly stable and that he loses no more than those lost amongst an equal number of private patients.

RESIGNATIONS FROM THE PANEL.

The total number of resignations of insurance practitioners received by the secretaries of panel committees throughout the country was as follows:—

	Areas.	Number on the panel.	Resignations— Number.	Resignations— Percentage.
England	127	16,356	15,460	94·5
Wales	17	1,157	1,086	96·3
Scotland	47	2,413	2,323	93·9
Total	191	19,926	18,869	94·7

Information was received from all the areas. In the case of Scotland the Highlands and Islands are not included.

RECORD OF A RURAL PANEL.

We have been asked what is the normal experience of rural panel practice in regard to the number of patients attended during the year, and the number of attendances at the surgery and at the house. No body of figures is available, although certain returns have been asked for and obtained by the Insurance Acts Committee of the British Medical Association. The time spent in entering daily attendances and visits amounts in the course of the year to no trifle, taken from the rural practitioner's already scanty leisure. We have, however, had the advantage of investigating the details of a practice in a rural district where minute records have been kept by two doctors in partnership. The partners live in the same village, the practice extending up to eight miles in various directions, and panel practice accounting for about one-quarter of the gross receipts. The records for 1921 and 1922 are as follow:—

	1921.	1922.
Number of patients on panel	1494	1429
,, ,, ill during year	516	551
,, attendances at surgery	4037	4100
,, visits paid at house	1504	2259
Cards removed during the year	156	167
Total remuneration received, including mileage and dispensing fees	£1250	£1090

With regard to the cards removed during the year, it should be added that the majority of these patients received visits which are not counted in the list as given above. The running motor-car expenses of the partnership, excluding capital outlay or redemption, amounted to £700 to £900 a year, and the full-time services of a dispenser were required.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Supply of Insulin.

IN a letter to the Dublin daily press Prof. T. G. Moorhead draws attention to the difficulty in providing insulin for poor patients. He points out that since the discovery of the therapeutic powers of insulin, the clinical hospitals have been besieged by patients clamouring for treatment. Prof. Moorhead would like to see a special "Insulin Fund" started to help poor patients both during their stay in hospital and subsequently. But, if it should prove that voluntary subscribers were either unwilling or unable to help, so long as the State was willing to pay for the cure of venereal disease, it should also help in providing the cost of the remedy for a disease which is a misfortune, and not a fault.

The Red Cross on Motor-Cars.

For some months past the continued use of the Red Cross on motor-cars in Ireland has given rise to criticism. Last winter and in the preceding years, when hostilities were still going on, the use of the Red Cross was, no doubt, not only a convenience but a protection. Of late, however, it has been no longer needed, and it was suggested that its continuous use savoured of unnecessary advertisement. Last week the Joint Committee of the British Red Cross Society and of the Order of St. John of Jerusalem gave warning that no more Red Cross slips would be issued by them, and medical men were asked to remove these slips from their cars as there was now no necessity for their use. It is to be hoped that the advice will be followed. The labelling of doctors as such by the wearing of conspicuous marks in normal times is without justification.

Death of Dr. Wallace Beatty.

The death of Dr. Wallace Beatty, honorary professor of dermatology in the University of Dublin, occurred on Nov. 8th at his residence in Dublin. He was in his seventieth year and for the past six or eight months had been in unsatisfactory health. Dr. Beatty was educated at Dungannon Royal School and at Trinity College, Dublin. In the latter he won scholarships both in classics and in medical subjects, and he represented the College on the football field. He obtained his medical qualifications in 1879 and became a Fellow of the Royal College of Physicians of Ireland in 1887. He was elected a physician to the Adelaide Hospital and for many years practised general medicine though always keeping a special interest in diseases of the skin. In middle life he began to suffer from deafness, which gradually made the work of a general physician more difficult, and some 20 years ago he decided to confine his work to dermatology. He contributed many articles and reports dealing with this subject to the special journals. Only last year he published a small manual of diseases of the skin, which in its clarity and precision leaves nothing to be desired. It consisted mainly of the lectures he was in the habit of giving to visitors to his dispensary at the Adelaide Hospital. The death of Dr. Beatty removes a serious and gifted worker in the field of dermatology, and also deprives the medical profession of one of its most loved and respected members—modest, unassuming, and courteous.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Insurance against Sickness in Hungary.

THE Hungarian Minister of Public Welfare has under consideration a projected law relating to reform in the workers' insurance scheme. The new proposals, if accepted, will mark a true reform, inasmuch as insurance will then be extended to all classes, irrespective of financial or social status. The Hungarian medical journals oppose the innovation on the grounds (1) that private practice by physicians will be practically abolished, and (2) that it is too extreme a socialistic measure, in a country which is one of the most conservative of middle Europe. "We have no doubt," says the *Magyar Orvos* (Hungarian Physician) "that the Minister was guided by socialistic principles; but can one call a line of action socialistic which, while conferring equal benefits on rich and poor alike, at the same time despoils the medical profession of its chief source of income? Who is going to profit? Certainly not those to whom the Minister wishes to render good service."

Sick and Crippled Children: A Grave Outlook.

The annual meeting of the Hungarian Medico-Pedagogical Society, held last month, was attended

by many medical men, in addition to judges, teachers, and parents. All who spoke were unanimous in stating that the lowered standards of public health and of the physical fitness of the individual, with all their attendant distress, were due to the general poverty of the land. Thousands of children, and adults also, were crippled mentally and physically. All of these, it was held, could be restored to health, or at least rendered capable of earning a living, if adequate and free treatment were provided. One of the speakers went so far as to reproach the Government with spending more on horse-races than on the care of destitute children. Dr. Paul Ranschburg, neurologist, gave an address on the ways and means of conducting an effective campaign against the prevailing distress. He stated that the number of children who were in some way affected, either blind, deaf and dumb, crippled, or mentally and morally defective, exceeded 100,000. In the majority of cases, he stated, these defects were curable. Only a fraction of the moral defects had a pathological origin, by far the greater proportion were due to poverty and misery. He added, further, that in the light of modern knowledge on the functions of the endocrine glands, greater attention should be paid to the application of gland therapeutics in treating many mental and moral deficiencies. Mr. Daniel Geguss discussed the morals of the streets. As magistrate of the court for juvenile criminals, he had had the opportunity of studying the social causes of destitution among the youth. Girls went on the streets to escape from dirty and overcrowded lodgings, cold, sickness, and starvation. Parents in so many cases were unable to provide for their offspring, and thousands were driven to seek a livelihood in prostitution. Was it to be wondered at that 80–90 per cent. of such girls were diseased? The police refrained from controlling prostitutes, or of having them medically examined, as there was no accommodation available in the hospitals. Such problems called for most serious consideration; the remedy lay, the speaker asserted, in improving the social code, in providing adequate housing accommodation, and in educating the masses. The proscribing of immoral literature, the exclusion of all children under 16 years of age from cinemas, and the prohibition of juvenile employment were all imperative measures if sane and happy children were to be reared.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Rear Admiral J. Shand is placed on the Ret. List at own request.

ROYAL NAVAL VOLUNTEER RESERVE.

Temp. Surg. Lt. (D.) G. P. Monk is transferred to Permt. List as Surg. Lt. (D.).

ROYAL ARMY MEDICAL CORPS.

Maj. D. P. Watson is appointed Dep. Asst. Dir.-Gen., vice Maj. and Bt. Lt.-Col. H. V. Bagshaw.

Col. B. Watts, late R.A.M.C., retires on ret. pay.

Maj. N. E. Dunkerton relinquishes the temp. rank of Lt.-Col.

REGULAR ARMY RESERVE OF OFFICERS.

Col. J. D. Ferguson, late R.A.M.C., having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

MILITIA.

Capt. R. M. Beath to be Maj.

TERRITORIAL ARMY RESERVE.

Lt.-Col. A. M. Martin resigns his commn. and retains the rank of Lt.-Col.

ROYAL AIR FORCE.

Medical Branch: Flight Lt. B. F. Beatson (Capt., I.M.S.) is granted a permanent commission.

The undermentioned Flying Officers are promoted to the rank of Flight Lt.: T. J. D. Atteridge, E. C. K. H. Foreman, and W. J. G. Walker.

INDIAN MEDICAL SERVICE.

Col. C. H. Bowle-Evans to be Major-General.

Obituary.

THOMAS HENRY GREEN, M.D., F.R.C.P. LOND.,

CONSULTING PHYSICIAN TO THE CHARING CROSS AND BROMPTON HOSPITALS.

WE have already announced the death of Thomas Henry Green, consulting physician and emeritus lecturer on clinical medicine to Charing Cross Hospital and consulting physician to the Hospital for Diseases of the Chest, Brompton, which occurred at his residence at St. Albans on Nov. 5th last in the eighty-second year of his age.

Dr. Green, who for many years was recognised as a leading authority on diseases of the lungs, and whose text-book on pathology has well served so many students, was educated at University College, London, where he graduated as M.R.C.S. in 1861, taking the degree of M.B. Lond. in the following year. After holding the usual residential appointments at University College Hospital, he was elected physician to the North-West London Free Dispensary for Sick Children and later medical registrar to the Children's Hospital, Great Ormond-street. He proceeded to the M.D. degree in 1866 and was appointed lecturer on pathology at the Charing Cross Hospital, being elected assistant physician in 1869. He was already on the staff of the Hospital for Diseases of the Chest at Brompton, and throughout his long professional life he was associated with the two institutions, being at his death consulting physician to both. He was esteemed by his colleagues at each hospital as a highly equipped physician, for the care that he took both in making the diagnosis and allotting the proper treatment was boundless.

"It was a fortunate day in the history of Charing Cross Hospital," writes an old colleague, "when Thomas Henry Green joined its staff. He brought with him the spirit, example, and teaching of two of the masters in medicine of the time: Virchow, the greatest living pathologist; and Jenner, the leading clinician then in England. Fresh from Berlin after University College, young but by temperament calm, earnest, judicially minded, he introduced order and interest with precision and scientific methods into the post-mortem room for the first time, and order and true clinical observation into the out-patient department. He invited the students to the post-mortem room, and his descriptions of the conditions found were regarded as a marvel of lucidity and exposition. History reported that before Green's time post-mortem examinations stopped short at the discovery of 'the cause of death'; and his first necropsy was witnessed with amazement. Along with these methods he brought the doctrine of the cell and cellular pathology, the basis of his lectures and of his text-book on Pathology and Morbid Anatomy which was to become rapidly famous. His lectures on pathology were delivered with an enthusiasm and precision which carried conviction to students and rendered reference to text-books unnecessary.

"In the examination, treatment, and general care of his patients Green exercised the closest attention personally, and he exacted the like from his resident staff. Thus: 'You will sit up to-night with this patient' he said to a house physician, 'since sister cannot tell me how he slept.' His visits to the wards were strictly regulated; on fixed days to the patients with his house physician, on other days to meet his students. His bedside teaching was closely modelled on that of Jenner—precise, sententious, dogmatic, and eminently practical. His regular clinical lectures (he never accepted the chair of medicine) were planned and timed with the same precision—consisting of an annual series which the students learned to anticipate but which they valued none the less—his favourite subjects being pneumonia, typhoid fever, tuberculosis, and cardiac failure. Green's instruction was never lost or forgotten, as many of his hearers still testify. Or he would give a lecture of half an hour on a subject illustrated in an individual case—such as indigestion, dyspnœa, or paralysis—a homily which served his

pupils immediately as preparation for examinations and was a sure guide in practice in later years. Then the students were dismissed instead of 'going round' with him, for he held that tit-bits of clinical instruction were thrown away. He liked to adjust the various noteworthy points in a case in proper sequence and show the bearing of them to each other. Equal order and orderliness marked his work at Brompton. There he sat alone in the out-patient room or went round the wards with his resident officers, and requested visitors desirous of following his practice to meet him at Charing Cross.

"Apart from his wards and his own immediate offices, Green did not engage in the work of Charing Cross Hospital and its medical school, which were, in his earlier years there, passing from relative dullness and obscurity into a period of success as a teaching centre with fresh ideals. To this success Green's work and his name contributed largely, but he never was more than an ordinary member of the different committees. He fulfilled the duties of his posts unfailingly and in full measure, but he appeared to stop there: to spend no time in general colloquial discussions. Not that he was unsociable. Personally Green was by temperament reserved, not to say distant, in manner, habitually somewhat formal when receiving his friends and when bidding them good-bye. Indeed, he was in every respect precise, faultlessly trim in dress, punctilious, brief, definite, and exact, yet tactful in giving his opinion and advice to doctors, patients, and patients' friends. But in social intercourse and entertainment he was always bright, interesting, and full of enjoyment; nowhere more so than at the delightful old-time dinners of the Brompton staff. His pupils became his firm friends, and he a valued friend to them. Many of them still testify to the precious lessons they learnt at his side."

Upon his special subject Dr. Green was a clear and informative writer, good examples of his work being furnished by his clinical lectures on phthisis in our own columns, while he was a contributor on the same and allied subjects to the *British Medical Journal* and to the *Medical Times and Gazette*. Other papers by him were published in the Transactions of the Pathological Society and the Clinical Society and revealed the same qualities, in that the advice given was always clear and of a practical bearing. In Quain's "Dictionary of Medicine" he wrote the article on Inflammation of the Lungs, and he was also the author of a volume on the Pathology of Pulmonary Consumption. But Green will be best remembered by his "Manual of Pathology," the seventh edition of which appeared as recently as this year, being revised and enlarged by Dr. W. C. Bosanquet and Dr. G. S. Wilson. Few medical text-books can have enjoyed so successful a career as this one, for it has been in demand among medical students for over half a century. Year by year successive editors have been able to modernise it without robbing it of its original and distinguishing features. Thus it has always remained a model of a text-book.

WILLIAM HARRISON CRIPPS, F.R.C.S. ENG.

THE death occurred at his London residence on Nov. 8th of Mr. Harrison Cripps, consulting surgeon to St. Bartholomew's Hospital, and well-known also in the world of business as chairman of the Metropolitan Electric Supply Company.

William Harrison Cripps was the son of Henry William Cripps, Q.C., Recorder of Lichfield, and the brother of Lord Parmoor, and received his medical education at St. Bartholomew's Hospital, with which institution he was associated throughout the whole of his professional life. He qualified as F.R.C.S. in 1875, and was elected assistant surgeon to the hospital in 1883, becoming surgeon in 1902 in succession to Mr. Willett, so that, as has so often happened at St. Bartholomew's Hospital, he was a member of the staff for 20 years before he obtained a charge of wards. Happily a great opportunity for practice was furnished by his selection as surgeon to the gynæcological department. His gynæcological work is well known, but his chief professional reputation, as well as a large private practice, depended upon his skill in diagnosing and treating affections of the rectum. As long ago as 1876 he won the Jacksonian Prize of the Royal College of Surgeons of England for an essay on the treatment of cancer of the rectum. As a volume this essay went through several editions, the possibility of curing or relieving the patient by excision being closely considered, and from the date of publication he became a recognised authority on diseases of the rectum and anus.

Harrison Cripps wrote also a treatise upon abdominal surgery and ovariotomy, while he contributed valuable papers on both of his special subjects to the St. Bartholomew's Hospital Reports and to the columns of THE LANCET. Other papers, which he published in the Transactions of the Obstetrical Society and those of the Pathological Society, dealt with malformations of the rectum and the minute anatomy of certain rectal growths. He contributed also to Heath's "Dictionary of Practical Surgery" and Holmes's "System of Surgery"; his selection to assist in these well-known works being an indication of how high he stood in the opinion of the professional leaders as an exponent of the pathology and surgical technique of the difficult conditions with which he had made himself familiar. In the Royal College of Surgeons of England Harrison Cripps played an important part, for he was elected to the Council in 1908 and was a member of that body for a period of 12 years, serving for two years as Vice-President.

Sir D'Arcy Power has sent us the following appreciation:—

"A study of the careers of the Fellows of the Royal College of Surgeons of England shows that many hospital surgeons have been such good organisers and fine administrators as to have excelled in spheres widely divergent from those they had mapped out for themselves to conquer. The qualities which make a first-rate surgeon are identical with those required by a successful man of business, to take only a single example. Harrison Cripps was an outstanding instance and he used his talent in a double capacity with equal advantage. On his mother's side he came of a medical family long established in Gloucestershire, whilst his father who came of the same stock was a successful member of the Parliamentary bar. The most distinguished member of the Cripps and Lawrence families was Sir William Lawrence, surgeon to St. Bartholomew's Hospital from 1813 until 1865, and Cripps was therefore predestined to attach himself to the same school. He soon gave evidence of his ability by gaining the Jacksonian Prize for his essay on cancer of the rectum and its operative treatment, a subject which interested him until the end of his life. Promotion to the teaching and surgical staff soon followed and he obtained practical experience as surgeon to the Great Northern Hospital. He became assistant surgeon at St. Bartholomew's Hospital in 1883, after having previously contested an election in which he was beaten by Mr. W. J. Walsham. As assistant surgeon he remained until 1902, his hospital practice during this long period of waiting being restricted to the three beds allowed him by the courtesy of his senior. In later years he was attached as surgeon to the gynæcological ward of the hospital and he built up for himself a large operative and consulting practice in private. He attended the meetings of the Royal Medical and Chirurgical Society and of the Pathological Society during his early years with considerable assiduity and his contributions showed marked originality. He was amongst the first to advocate the performance of Littre's inguinal colostomy in preference to Amussat's lumbar operation, which was then in common use. But in later years he took no great part in advancing surgery, either by lecturing in the medical school or by undertaking any of the great public lectures at the Royal College of Surgeons.

"I knew nothing of his work as demonstrator of anatomy because he had become surgical registrar before I entered the hospital, but his teaching, like that of his colleagues, Mr. A. E. Cumberbatch and Mr. W. J. Walsham, must have been good, for there were no failures at what we used to call "the first batch" at the Primary Examination. My personal recollections begin with his teaching in the out-patient department, where he was thorough, painstaking, and somewhat of a martinet, for he insisted on regular and punctual attendance from those who elected to serve as his dressers. His teaching was Socratic and was enlivened by sharp showers of caustic wit descending with equal impartiality on students and patients and delivered in a soft voice with a little click of the tongue which was either copied from Sir William Lawrence or was an inherited Lawrence trait. I do not remember that he had at any time an especial regard for Listerian methods, at any rate, he did not operate under the carbolic spray which was then in vogue.

"As a man of business Cripps showed himself particularly capable. Beginning life with very slender resources he early saw the capabilities of electrical enterprise and he gradually bought founders' shares in the Metropolitan Electric Supply Company. A considerable portion of the company was eventually purchased by the St. Marylebone Borough Council when Cripps received the reward of his foresight, whilst at the same time he remained as chairman of the original company. His knowledge of business was always placed at the disposal of the College of Surgeons whilst he was on the Council and for some years he was a valued member of the Finance Committee. His business habits sometimes made him a little exacting in the matter of fees, for he realised the value of money and maintained that professional services were apt to be inadequately remunerated.

"Cripps was seen at his best as a host whether in his house in Stratford-place, at Abbotsford, or in later years at Glendaruel in Argyllshire. He loved to have his house full of guests and that he might give the greatest pleasure to the greatest number of his friends he was accustomed to invite each for a definite period. All were welcome, alternative plans were made daily that all might be amused, and the evenings were enlivened with pleasant talk interspersed with good music. As he grew older the jibe and sarcasm of his younger days remained, but the jibe had lost its bitterness and the sarcasm had become more human. There remained the courteous host with the polished manners reminiscent of the family tradition of what was befitting a Gloucestershire gentleman."

FRANK STANLEY TINKER, M.B., B.C. CAMB.

WE regret to announce the death in Devonshire of Dr. Stanley Tinker. After qualifying in 1911, and holding resident appointments at the Liverpool Royal Infirmary, he was invalided to Switzerland in the spring of 1913 with signs of pulmonary tuberculosis. Having practically recovered after 18 months in the Alps, a period which he utilised to make himself familiar with sanatorium treatment and the routine work of a clinical laboratory, he returned to England to take his Cambridge medical degree, and became in succession school medical officer to the Surrey County Council, one of the Surrey county tuberculosis officers, and medical superintendent of Crooksbury Sanatorium, Farnham. He also translated Cornet's monograph on miliary tuberculosis, and was an active member of the editorial board of *Tubercle*. At this time he became interested in municipal workshops for tuberculous patients, and worked out a scheme for the post-sanatorium employment of the consumptive ex-soldier. These qualifications procured him the appointment of medical superintendent at the Barrowmore Hall Tuberculosis Colony, near Chester, where he proved an able administrator as well as clinician. Unfortunately an attack of influenza lit up again his old chest trouble, and he again sought health in Switzerland, this time without avail. Tinker will be missed in the circle of younger tuberculosis administrators, among whom he was widely esteemed.

Correspondence.

"Audi alteram partem."

THE CENTENARY DINNER: AN INCORRECT RUMOUR.

To the Editor of THE LANCET.

SIR,—Much to my surprise I have been informed that there will be no medical women present at THE LANCET Centenary Dinner. Can this possibly be correct? I am, Sir, yours faithfully,

Nov. 13th, 1923. M.D.

*** It is entirely incorrect, and the circulation of this report has caused great annoyance. Not only are medical women expected, but many have already signified their intention of being present on Nov. 29th at the Hotel Victoria.—ED. L.

AN IMPETUS IN THE EVOLUTION OF MONOGAMY.

To the Editor of THE LANCET.

SIR,—There is no lack of testimony, explicit or implied, in the many articles which have recently appeared in the medical journals that gonorrhœa, whether occurring in the male or female, is a sterilising disease. That capacity to breed is much greater among 10,000 couples who have not suffered from gonorrhœa, whether singly or jointly, than amongst 10,000 who have so suffered, must be a self-evident deduction. This is a matter of massive tendency among large numbers of individuals, not of individual cases; though, of course, individual cases supply this conception of the great sterilising power of gonorrhœa.

One cannot fail to be struck by a condition complementary to gonorrhœal sterility in syphilitic destruction of infant life.

"There is no disease which is so destructive to infant life . . . an army in numbers to represent the mortality of infant syphilis annually in England and Wales and in ordinary marching order four deep would reach from Aldgate Pump to the Marble Arch, and would take an hour passing any given point; 50 per cent. of syphilitic fœtuses are stillborn; 78 per cent. of those born alive die within the first year, most of the deaths occurring within the first week after birth: and of the remaining 22 per cent. many die in early childhood." (Mr. John Adams, F.R.C.S., M.A.B. annual report, 1922.)

Children which are not even conceived cannot have their teeth set on edge by the sour grape of a sterilising gonorrhœa. Further, since few syphilitic children survive as congenital or hereditary syphilitics but few can present any feature of dentition due to disastrous parental Bacchic feasting. Nature is really very benign in her deep and insistent workings.

Now, a batch of 10,000 syphilitics will contain a very much higher proportion of the persistently promiscuous or polygamous than will 10,000 non-syphilitics. I think this is axiomatic. Further, since a sheep dog produces pups which without any teaching run around a flock of sheep instead of at them, whereas an Irish terrier on first sight of a sheep will start worrying it, and since we have an aphorism, "like father, like son," and are not referring to the pimple on the nose but to deep-set mental characteristics which proclaim themselves in bodily action, there is not much necessity to drive home the argument of hereditary capacity. The inevitable deduction is that gonorrhœa and syphilis are benign and large factors in the evolution of that marital care which, according to Josephus, Moses enjoined on the Israelites,

"As esteeming it a happy thing that men should be wise in the affairs of wedlock; and that it was profitable both to cities and families that children should be known to be genuine."

It is suggested that syphilis was introduced into Europe only about the year 1500. This, were it a fact, would still leave sufficient time up to date for

an enormous impetus in the evolution by natural selection of the monogamous instinct. The statement quoted from the M.A.B. report points to the rapidity and force with which the selection goes on at present in a quite natural and comparatively benign way. The rapidity with which in Plymouth Harbour changes in the crab's carapace took place under a change of environment—namely, a little mud in the water—was well brought out by Prof. Weldon. Some such rapidity of effective action in England and Wales has taken place under syphilis, due allowance being made for the greater period of years of a generation in man and the longer period over which the influence has acted.

We are apt to be shocked by the statement on syphilitic infantile mortality, but its bearing on the problems of life as indicated above would seem to be essentially a factor for consideration whenever infant mortality is mooted. We may shrink from the consideration, but such a gesture would be unworthy.

I am, Sir, yours faithfully,

Gravesend, Nov. 12th, 1923. W. M. WILLOUGHBY.

PSYCHO-NEUROTIC SYMPTOMS IN MINERS' NYSTAGMUS.

To the Editor of THE LANCET.

SIR,—The first and second reports of the Miners' Nystagmus Committee have not received the attention they deserve. The data collected show that the disease is costing the country £350,000 directly, and £1,000,000 indirectly. In these times an effort should be made to reduce this expenditure. In America, where no compensation is given, little is heard of incapacity due to nystagmus, or, indeed, of the existence of the disease. In Belgium the incidence remains stationary. The same apparently applies to France and Germany. Yet in Great Britain the incidence has increased at an alarming rate, and the cost in compensation has gone up from £13,000 in 1908 to £343,000 in 1920. The reports make it clear that this is due chiefly to the alteration in 1913 of the definition of the disease in the third schedule of the Workmen's Compensation Act, which made the presence of oscillation of the eyeballs unnecessary in the diagnosis. As a result, a large number of men became entitled to compensation whose incapacity was due to psycho-neurotic symptoms. "This group is the one which has increased the reported cases." One would have thought that the Committee would proceed at once to investigate the nature and origin of the psycho-neurosis, and to link it up with the physical signs, of which oscillation of the eyeballs is the chief. But one looks in vain for even a surmise that they may be connected. Does oscillation cause the neurosis, or does the latter induce the oscillation? Is oscillation merely a physical eccentricity, or is it an essential part of the whole abnormal state? An answer to these questions may save the country so much money that pressure should be brought to bear upon the Committee to clear up the mystery. "The standard of physical signs which is in vogue in this country for deciding whether any case should be certified as suffering from miners' nystagmus too readily admits psycho-neurotic cases to whom harm and not benefit accrues from compensation. A stricter standard based on physical signs should be adopted." The ambiguity is perplexing. Does it mean that *all* psycho-neurotic cases are harmed by compensation? Or does it mean that only certain cases are harmed? If the latter, what physical signs of the neurosis are to determine the issue? Photophobia and blinking of the eyelids are not peculiar to miners' nystagmus; they occur commonly in shell shock. The reports show that about a quarter of all underground workers have oscillation of the eyeballs. Severe cases refuse to stop work because they are more comfortable at work. One even plays cricket for his colliery. Would the Committee enforce retirement in these cases, or would they await the development of psycho-neurotic symptoms?

In the introduction to the second report, the Committee state that they "are continuing their work, and have some investigations in view which will deal further with the physiological problems involved." Physiology has done nothing for shell shock. Psychology has done much. Dr. W. H. R. Rivers pointed out the similarity of the symptoms in the war neuroses and miners' nystagmus. Since his death, psychopathology has not been represented in any way on the Committee. It seems reasonable to ask that an expert be appointed at once, having regard to the expenditure annually of a million of money in Great Britain as against nothing in America.

I am, Sir, yours faithfully,

Portsmouth, Nov. 2nd, 1923. W. INMAN.

THE ALBUMINURIA OF PREGNANCY.

To the Editor of THE LANCET.

SIR,—I have to thank Prof. Frank Cook for the reference, in his letter to THE LANCET of Nov. 3rd, to my paper on Unilateral Œdema with Albuminuria. The whole subject of "unirenal" albuminuria is only beginning to receive attention, and it needs further investigation. Prof. Cook agrees with me that the procedure of catheterisation of the ureters cannot be carried out in all suspected cases, and the postural method of investigation adopted in my case may then give valuable information. But its exact significance has yet to be determined. In that case, it seemed to afford something very near to proof of the unilateral origin of the albuminuria. But the inference that the albumin was coming from the left kidney depended upon the presence of left-sided œdema, and also upon the similar case recorded by Ehrmann. In cases in which there is no such œdema, it would be difficult from postural observations alone to decide from which of the two kidneys the albumin arises. I would therefore venture to suggest that in all cases in which catheterisation of the ureters demonstrates the origin of an albuminuria from one only of the two kidneys, the observation should be supplemented by postural investigations as suggested in my paper. By this means it might be possible to gain a positive knowledge of the significance of the results so obtained, and eventually perhaps to do away with the necessity of catheterising the ureters.

It is worth noting that in my case standing vertically upright produced practically no increase in the amount of albumin present beforehand, and it may interest Prof. Cook to know that the same was true of a small number of cases of apparently harmless albuminuria in pregnant women kindly placed at my disposal by my colleague, Prof. Thomas Wilson. But in all the cases of orthostatic albuminuria, recorded in my paper in the *Quarterly Journal of Medicine*, the ten minutes' standing test produced a marked and immediate response, except during a period of diuresis. Yet recent observations show that in orthostatic albuminuria the albumin, at any rate, sometimes comes from one kidney only. The effect of upright standing is therefore another point that might be worth investigating, if Prof. Cook has the opportunity.

I agree with Mr. R. H. Paramore in his contention that the albuminuria of pregnancy is not likely to be explained on mechanical grounds to any great extent, or at any rate that the explanation will be found to apply only to a limited group of cases, of which Prof. Cook's first case is clearly an example. I believe the mechanical cause is too readily invoked as an explanation even of albuminuria of immediately postural origin, and that further investigation will show that many of these cases have a renal pathology. That there are two very different conditions at present included in the group of cases of so-called orthostatic albuminuria I am very sure, but the grounds for their distinction have not yet, I think, been fully ascertained.

I am, Sir, yours faithfully,

Birmingham, Nov. 10th, 1923. JAS. W. RUSSELL.

NASAL SINUSITIS IN PHTHISIS.

To the Editor of THE LANCET.

SIR,—Dr. A. L. Yates's paper on the simulation of phthisis by nasal sinusitis is of the useful type that recognises in addition the *complication* of the first by the second. One or two points call for comment. Firstly, there is undoubtedly important literature prior to 1916. Volpillac in an 1898 thesis is cited as having published cases where treatment of the maxillary sinus cured apparent phthisis. Certainly the next year Friedrich[1] mentioned obstinate bronchitis from sinusitis. The best early paper is, however, that of Du Magny, the first to note the apical situation of the pulmonary signs, which of course makes confusion with phthisis easy. He did not explain why the apex especially should suffer, but in 1917[2] I suggested this was because of the deficient expulsive action obtaining at the pulmonary apex, by reason of its extra-thoracic position and the well-known anatomical peculiarity of its bronchi, factors invoked to explain an allied non-tuberculous condition, Krönig's apical collapse-induration, that, however, results from dust, not pus, inhalation. Thus the pus from above would invade the lung pretty evenly, but be coughed up again from all parts better than from the apex. Du Magny[3] said that all suppurations of the upper respiratory passages, including otitis media, were thus dangerous, and eight years later a pupil of his gave, in the *Revue de Moure*, 62 observations in support. Before this, Lambert Lack and Mackie had both stated that discharges from an antral empyema might cause signs and symptoms of active phthisis, which cleared up under nasal treatment.

Secondly, Dr. Yates states that posterior ethmoidal and sphenoidal sinusitis had not been met with except in conjunction with other sinusitis, and that frontal and anterior ethmoidal sinusitis do not complicate the diagnosis of chest conditions. However, on p. 137 of my book, already mentioned, a case is recorded of double, almost exclusively right-sided, sphenoidal sinusitis that I met with at a consumption hospital. I sent it to Golden-square, where the right sphenoidal sinus was operated on. Seven years later no pulmonary or nasal symptoms. Further, D. McKenzie[4] attributed purulent ethmoiditis to ten out of 102 out-patients at a consumption hospital. I do not want to quote myself again, but if he will do me the honour to look he will find evidence of frontal and of ethmoidal sinusitis both in patients wrongly diagnosed phthisical, as well as in sputum-positive patients.

Lastly, he will find, too, I think, that "certain conditions so regularly found in the nose and throat in patients suffering from pulmonary tuberculosis when neither laryngeal ulceration nor sinusitis are present" must be regarded, *not* as results of this disease, but as contributory causes. So well known a laryngologist as Moure, of Bordeaux, makes of them a separate non-tuberculous nasal affection, preceding the consumption, constitutional, and even hereditary. Too schematic a generalisation, no doubt; but quite certainly nasal obstruction, intranasal atrophy, and post-nasal catarrh are rife in consumptives; sinusitis on the whole is vastly less common. In conclusion, I would deprecate any packing of nasal sinuses in consumptives with antiseptics. If, as often, operation is contra-indicated, gentle nasal syringing with an alkaline collunarium, which the patient learns very easily to do for himself, is all that is necessary.

I am, Sir, yours faithfully,

Barnsley, Nov. 3rd, 1923. W. C. RIVERS.

[1] Rhinologie, Laryngologie, u. Otologie in ihrer Bedeutung f. d. allg. Med., Leipzig, p. 13.
[2] Three Clinical Studies in Tuberculous Predisposition. London: Allen and Unwin.
[3] Bulletin Médicale, July 3rd, 1901.
[4] Journal of Laryngology, May–July, 1916.

THE LONDON FEVER HOSPITAL.

To the Editor of THE LANCET.

SIR,—The administration and maintenance of the London Fever Hospital, which was the subject of an annotation in THE LANCET of Nov. 10th, presents serious problems to its committee and staff, problems which are largely due to the special nature of the diseases with which the institution has to deal. A personnel which is adequate when the hospital is full is expensive to maintain over periods when the incidence of fevers is slight and at such times there is always the temptation to skeletonise the staff on the ground of economy. Experience has proved that economies of this nature are more than a mistake, they are highly dangerous. The specially trained staff of a fever hospital cannot be disbanded and replaced at a short notice. The danger of an imperfectly trained staff needs no emphasis. It takes time for the basic principles of rigid medical asepsis to become so ingrained that they are part of a nurse's second nature. Moreover newly-imported nurses are very apt to fall victims to the disease they are nursing and themselves to fill up beds which would be available for other cases. Further, from the very nature of its work the hospital must maintain its own laundry and disinfector with trained attendants who can be relied upon to understand their individual responsibilities. It follows that expenses of maintenance must continue to be high although patients dwindle and receipts fall. The pressing problem is to tide over the quiet periods without impairing the efficiency of the hospital. Your annotation is timely and more than welcome. There must be at all times in London and its suburbs sporadic cases of infectious disease, for which the accommodation offered by the London Fever Hospital is particularly adapted and a knowledge of its existence and availability should prove a boon to those who have to deal with such emergencies.

I am, Sir, yours faithfully,

CHARLES R. BOX,
Senior Physician, London Fever Hospital.

Nov. 12th, 1923.

PRIVATE WARDS IN LONDON HOSPITALS.

To the Editor of THE LANCET.

SIR,—May I draw your attention to the fact that this hospital has 25 private wards which are allocated according to the medical needs of the patients who are expected to contribute £3 3*s.* per week, but smaller fees are accepted? The patients are placed under the care of the honorary medical staff who do not receive fees, and the £3 3*s.* represents the total liability of the patient.

I am, Sir, yours faithfully,

H. W. BURLEIGH,
Secretary and General Superintendent, Hospital for Epilepsy and Paralysis.

Maida Vale, W., Nov. 9th, 1923.

UNIVERSITY OF MANCHESTER.—Lord Crawford was on Nov. 10th installed as Chancellor of the University. Honorary degrees as Doctors of Law were conferred on Dr. J. G. Adami and Sir Arthur Keith.

LANCASHIRE AND THE SPAHLINGER TREATMENT.—The Ministry of Health has withheld permission from the Lancashire Insurance Committee to carry out an investigation into the best way of making this treatment effective in their area. The original proposal of partly subsidising an existing institution fell through owing to technical difficulties. It was then proposed that a sum of £1000 be used to make a preliminary investigation into the practical possibilities of the treatment, but the Ministry does not consider that there is anything within the scope of the Public Health Act allowing the Lancashire Committee to make such an investigation as is proposed. Another suggestion was made that the Minister of Health might exercise certain special powers conferred on him by a schedule in the Act, but the Minister declines to exercise these special powers.

Medical News.

UNIVERSITY OF CAMBRIDGE.—The amended order of examinations for Medical and Surgical Degrees, to be held in December, 1923, is as follows: Of the Third Examination, Part I. (Surgery and Midwifery and Gynæcology) will be held from Dec. 11th to 15th; Part II. (Principles and Practice of Physic, and Pathology and Pharmacology) on Dec. 12th, 13th, 17th, 18th, 19th, and 20th. The M.Ch. Examination will be held on Dec. 11th, 14th, and 15th.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary Council meeting was held on Nov. 8th, with Sir John Bland-Sutton in the chair.—A report was read from the Court of Examiners respecting candidates found qualified for the diploma of Membership, and diplomas were awarded to 170 candidates mentioned in the report.—A report was read from the secretary respecting a candidate, Sybil Grace Mocatta, found qualified for the diploma of Fellow, and a diploma of Fellowship was awarded her.—Dr. J. A. Ormerod was re-elected a member of the Committee of Management.—Mr. C. H. Fagge was appointed a representative of the College to serve on the Council of the Fellowship of Medicine and Post-Graduate Medical Association for the ensuing year.—Mr. Raymond Johnson was appointed as representative of the College on the Managing Committee of the Schiff Home of Recovery, on the resignation of Sir Herbert Waterhouse.—The President announced that he had granted the use of the lecture theatre for five lectures on the Influence of Environment on the Life of Bacteria, by Mr. F. W. Twort, superintendent of the Brown Animal Sanatory Institution, at 4 P.M., on Dec. 11th, 13th, 17th, 18th, and 19th.—The secretary reported the notices of motion which have been given for the annual meeting of Fellows and Members on Nov. 15th.—The President reported that Mr. Warren Low's term of office on the Court of Examiners would expire on Dec. 12th next, and that the vacancy thus occasioned would be filled up at the ordinary Council on Dec. 13th. Mr. Low is eligible for re-election.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the annual meeting of the Faculty on Nov. 5th the following office-bearers were elected:—

President: Dr. Thomas K. Munro. Visitor: Mr. J. H. Pringle. Treasurer: Mr. J. H. MacDonald. Honorary Librarian: Dr. E. H. L. Oliphant. Councillors: The President, ex officio; the Visitor, ex officio; the Treasurer, ex officio; the Honorary Librarian, ex officio; Dr. James A. Adams, as Representative to the General Medical Council, ex officio; Dr. A. K. Chalmers, Mr. J. Mason Noble, Sir Kennedy Dalziel, Dr. A. Freeland Fergus, Mr. A. E. Maylard, Dr. R. M. Buchanan.

Examiners for Licence, for the Fellowship, for the Diploma in Public Health, and for the Dental Board were appointed.

At the same meeting the following were admitted (after examination) as Fellows of Faculty:—

George Frederick Andeen, Prabodh Chandra Banerjee, L.M.S., and John Hare, R.A.M.C.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.—The annual general meeting will be held at 11, Chandos-street, Cavendish-square, W., on Nov. 29th, at 5.15 P.M., when Dr. H. Crichton Miller and Dr. H. C. Cameron will introduce a discussion on the Nervous Child.

CHELSEA CLINICAL SOCIETY.—The next meeting of the Society will take place at the Club Room, St. George's Hospital, on Nov. 20th, at 8.30 P.M. A discussion on the Treatment of the Failing Heart will be opened by Sir Sydney Russell-Wells.

ROYAL SOCIETY OF MEDICINE.—Sir Jagadis Bose, F.R.S., will deliver a lecture on Assimilation and Circulation in Plants on Dec. 6th, at 5.30 P.M. It will be illustrated on the epidiascope, and the lecturer will exhibit his apparatus in operation. The chair will be taken by the President of the Society, Sir William Hale-White.

HUNTERIAN SOCIETY.—A meeting will be held at Cutlers' Hall, Warwick-lane, London, E.C., on Monday, Nov. 19th, at 8.45 P.M., when Mr. W. B. Maxwell and Dr. T. B. Hyslop will open a discussion on Medicine and Letters. It is hoped that, amongst others, the following will take part in the discussion: Sir Anthony Hope Hawkins, Sir D'Arcy Power, Mr. Morley Roberts, Dr. Norman, and Mr. Johnson Abraham.

ABERDEEN UNIVERSITY CLUB, LONDON.—The bi-annual dinner will be held at Gatti's Restaurant on Nov. 27th at 7.30 P.M., with Lord Elphinstone in the chair and Prof. G. Milligan, D.D., as principal guest. Any past or present graduates wishing to attend the dinner should communicate with Dr. Anstruther Milligan, at 11, Upper Brook-street, London, W. 1.

CHADWICK PUBLIC LECTURE.—A public lecture entitled Remedial Hygiene—Health and the Hospital will be given by Major Harry Barnes, in the Lecture Room of the Royal Society of Arts, John-street, Adelphi, W.C., on Friday, Nov. 23rd, at 8 P.M. Sir William J. Collins, M.D., will occupy the chair.

MEDICO-LEGAL SOCIETY.—The annual dinner of the Society will be held at the Holborn Restaurant, London, W.C., on Friday, Dec. 14th, at 7 for 7.15 P.M., Lord Justice Atkin, the President, in the chair. The price of dinner is 14*s.* 6*d.*, exclusive of wines. All communications should be made to Mr. Ernest Goddard, Hon. Sec., 3, South-square, Gray's Inn, London, W.C. 1.

A meeting of the Society will be held at 11, Chandos-street, Cavendish-square, London, W., on Nov. 20th, at 8.30 P.M., when a paper will be read by Dr. Godfrey Carter, entitled Gas Poisoning as Alleged Cause in a Case of Murder, which will be followed by a discussion.

GLASGOW UNIVERSITY: *The Samson Gemmell Chair.* At a special meeting of the University Court, presided over by the Lord Rector, the draft ordinance for the establishment of the Samson Gemmell Chair in Medical Pediatrics was approved. The chair is to be associated with the Royal Hospital for Sick Children.

Students' Welfare Bazaar.—The success of this bazaar, held in the University on Nov. 8th to 10th, may be judged from the total sum already collected—£21,530. Some hundred pounds are still to be included in the grand total.

GLASGOW ROYAL MATERNITY HOSPITAL.—At a meeting of the Glasgow Women Citizens' Association, Councillor Mrs. Baird Smith spoke on the subject of the Glasgow Royal Maternity Hospital. In urging the claims of the institution, she said there was comfortable accommodation for 145 patients. Last year 3641 patients were admitted, and 42,614 were visited in the district. There should be added to the hospital a network of maternity homes, in which working women might obtain the period of rest so valuable after childbirth.

THE LATE DR. FRANK WILDERS MAWBY.—Dr. F. W. Mawby died, after a brief illness, at his home in Littleport, Ely, Cambs, on Sept. 15th, aged 60. Born in Lincolnshire, he was educated at Christ's Hospital, and qualified L.S.A. in 1891 at Guy's Hospital. For the past 30 years Dr. Mawby was in practice at Littleport, where he also held appointments as medical officer of Littleport and Redmere District, Ely Union, and as certifying factory surgeon. His death is regretted by a wide circle of friends in Littleport, for both privately and professionally he was held in high esteem.

CANADIAN SOCIAL HYGIENE COUNCIL.—A report of the Medical Committee of the Canadian Social Hygiene Council on the Standardisation of the Diagnosis and Treatment of Venereal Diseases has recently been issued by the Department of Public Health at Ottawa. The report represents the work of a committee of 35 prominent men and women physicians acting under the chairmanship of Dr. E. E. King of Toronto. Final editing of their findings and recommendations was done by Dr. J. J. Heagerty, Chief of the Division of Venereal Disease Control in the Dominion Department of Health, and the report, which is to be widely circulated among medical men in Canada, includes the following sections and subsections:—

Medical Research and Laboratory Questions, with subsections dealing with Licensing of Men doing Wassermann Tests and Standardisation of the Methods of Making Wassermann Tests; Diagnostic Tests in Syphilis by Demonstration of Treponema Pallidum; Significance of Wassermann Reaction; Negative Wassermann Reaction, with subsections with Precautionary Measures; Wassermann Tests in Connexion with the Treatment of Syphilis and Especially as an Evidence of Cure; Treatment of Syphilis and Relative Value of Arsenicals and Non-Arsenicals, with subsection, Eligibility of Marriage; Minimum Requirements of Treatment; Treatment of Syphilis, with subsections dealing with Early Primary Cases, Dark Field; Wassermann Positive, Secondary, Tertiary, and Latent Syphilis; Hereditary Syphilis; Early Preventive Treatment against Syphilis; Gonorrhœa; Treatment of Acute Urethritis; Complications of Gonorrhœa in the Male; Chronic Gonorrhœa; Pelvic Gonorrhœa with subsections on Treatment and Standard of Cure; Treatment of Chronic Gonorrhœa, with subsections on Clinical Examination, Bougie à Boule, Urethroscopy, Blood Examination, Treatment, and Standard of Cure; Gonorrhœa in the Adult Female; Treatment of Gonorrhœa in the Female; Diagnosis of Gonorrhœa in Children, with subsections on its Treatment, the Rationale, Complications, and the Standard of Cure of Vulvo-Vaginitis in Children.

The report recommends that "all laboratories, including university laboratories, doing Wassermann tests, shall be licensed by and under the supervision of the Provincial Board of Health," and urges "private, university, hospital, municipal, and provincial laboratories, in the use of these

tests, to adopt recognised methods, so as to approach uniform results for the purposes of comparative study." The personnel of the Medical Committee who prepared the report is as follows :—

Chairman : Dr. E. E. King. Secretary : Dr. C. H. Archibald. Members : Dr. Gordon Bates, Dr. Kendal Bates, Dr. Noble Black, Dr. W. Colling, Dr. M. A. Cox, Dr. H. C. Cruickshank, Dr. H. K. Detweiler, Dr. E. C. Dixon, Dr. W. E. Ferguson, Dr. A. G. Fleming, Dr. Edna Guest, Dr. C. H. Hair, Dr. E. B. Hardy, Dr. F. W. Hassard, Dr. Hewett, Dr G. Howland, Dr. W. Jones, Dr. W. W. Lailey, Dr. Lillian Langstaffe, Dr. J. C. McClelland, Dr. R. A. McComb, Dr. Alex McKay, Dr. F. W. Marlow, Dr. E. A. Morgan, Dr. R. W. Naylor, Dr. H. E. Paul, Dr. Robin Pearse, Dr. G. W. Ross, Dr. Geo. S. Strathy, Dr. E. J. Trow, Dr. W. T. Williams, and Dr. A. I. Willinsky.

The Canadian Social Hygiene Council will follow this report immediately by another on the same subject, prepared specially for the instruction of nurses and for use in all training schools for nurses throughout Canada.

LONDON HOSPITAL MEDICAL COLLEGE. — The Schorstein Memorial Lecture will be delivered by Dr. Gordon Holmes on Dec. 3rd, at 4.15 P.M., in the anatomical theatre of the College. The subject will be Some Symptoms of Cerebral Irritation.

UNIVERSITY COLLEGE HOSPITAL.—A festival dinner will be held at the Savoy Hotel on Nov. 20th, at 7.30 P.M., for the purpose of inaugurating a campaign to raise for University College Hospital a capital sum of £500,000. This campaign is a direct result of, and is necessitated by, the gift made for the purposes of medical education by the Rockefeller Foundation of New York. The Rockefeller gift is to be devoted exclusively to purposes of medical education and research, and the Rockefeller Foundation in making the gift indicated clearly that the maintenance of the additional beds so provided was the responsibility of the British people. Among the speakers at the dinner will be Mr. Winston Churchill. Prince Henry will preside, and will announce at the dinner a list of the subscriptions received towards this special appeal.

THE PASTEUR INSTITUTE OF SOUTHERN INDIA, COONOOR.—In the annual report of the Institute, the director, Lieut.-Colonel J. W. Cornwall, I.M.S., states that the number of patients who underwent a full course of treatment during the year in the Institute was 3375, a decrease of 96 on the previous year's number. The fall in the number was due to the gradual introduction of the scheme for the issue of anti-rabic vaccine to Government headquarter hospitals in the Presidency. With the sanction of the Government it was decided to issue carbolised anti-rabic vaccine to different centres in the Presidency so that persons bitten by animals suspected to be rabid might be treated locally and saved long railway journeys to Coonoor with all the attendant expenses. The scheme is a tentative one, and treatment at the Pasteur Institute is still open to anyone who desires it and can go to Coonoor at his own expense. It is too soon, the report states, to comment on the working of the new scheme. Possibly the chief drawback will be that many persons who are being treated near their homes will not have patience to go through the full course of treatment. A pamphlet entitled Notes on Rabies for Medical Officers, was sent to the superintendents of all the headquarters hospitals, which contained all necessary information under the following headings : (1) The possibilities of infection with the virus of rabies ; (2) methods of dealing with wounds inflicted by rabid animals ; (3) how to deal with a dog which has bitten one or more persons ; (4) indications for anti-rabic treatment ; (5) care of patients during and after treatment ; (6) how to give the injections ; (7) reactions, local and systemic. The total number of persons who received anti-rabic treatment during the year was 4623, distributed between the following institutions : at the Pasteur Institute, Coonoor, 3375 ; at Government headquarter hospitals, 1248.

Parliamentary Intelligence.

HOUSE OF COMMONS.

TUESDAY, NOV. 13TH.

PARLIAMENT reassembled on Nov. 13th after the summer recess.

Panel Doctors' Fees.

Sir KINGSLEY WOOD asked the Minister of Health whether he could state the present position of the negotiations with the doctors on the panel lists concerning their duties and remuneration ; and whether he had conferred with the approved societies in relation to such matters.—Sir W. JOYNSON-HICKS said : I have now made two alternative offers to the doctors which will be considered by the Panel Conference to-morrow. As regards the second part of the question, for some months past a series of consultations have been taking place with the Approved Societies' Consultative Councils of England and Scotland, and, in addition, conferences have been held with representatives of the various important groups of approved societies in Great Britain in relation to both duties and remuneration.

Sir KINGSLEY WOOD : What is the additional sum involved in the offer that has been made to the medical profession, and from what source does the right hon. gentleman intend to obtain payment ?—Sir W. JOYNSON-HICKS : I am not prepared to make any statement until I get the reply of the doctors, which I hope will be to-morrow. If my hon. friend will put down a further question for Thursday I will be prepared to answer it.

Mr. SEXTON : May I ask the right hon. gentleman whether he anticipates that he will be able to make any agreement by the end of this week ?—Sir W. JOYNSON-HICKS : I hope to be in a position to make an agreement before the end of this week.

Major MACKENZIE WOOD : Would the right hon. gentleman consider the advisability of publishing an actuarial report on the new proposals ?—Sir W. JOYNSON-HICKS : If the offer I have made is accepted, I propose to lay a White Paper on the whole subject, which will include an actuarial report.

Sir W. R. ADKINS : Is it an agreement assented to by the approved societies ?—Sir W. JOYNSON-HICKS : No, Sir. I, as Minister of Health, after fully considering the whole matter, have made alternative proposals to the doctors. If either of these proposals is accepted legislation will be necessary, and I hope to have the responsibility of bringing in the legislation and submitting it to the House.

Dissolution of Parliament.

Mr. BALDWIN announced that Parliament would be dissolved on Friday, Nov. 16th.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Nov. 20th.

PATHOLOGY : at 8.30 P.M.

Communications :

Dr. E. E. Atkin : Cultural Characteristics of the Different Types of Meningococci.
Dr. O. Heath : The Meaning of Fever ; illustrated from Typhoid.
Baron Nopcsa : Evolution and Disease : based on Osteological Changes in Man and Fossil Animals.
Dr. J. A. Arkwright : The Characteristics of Certain Cultures Sensitive to Bacteriophage.

Wednesday, Nov. 21st.

HISTORY OF MEDICINE : at 5 P.M.

Paper :

Mr. Percy E. Newberry : Egyptian Medicine.

Friday, Nov. 23rd.

STUDY OF DISEASE IN CHILDREN : at 5 P.M. (Cases at 4.30 P.M.)

Cases and Specimens :

Dr. J. D. Rolleston : Specimen of Hair-ball of the Stomach.
Dr. Benjamin (for Dr. Robert Hutchison) : Case of Precocious Puberty.
Dr. W. E. Robinson : Lymphangioma of the Foot.
Dr. C. Worster-Drought : Case of Progressive Neural Macular Atrophy affecting the Upper Limbs.
Dr. Norah Schuster and Dr. Donald Paterson : Specimen from a case of Paroxysmal Tachycardia in an Infant with Gross Malformation of the Heart.

EPIDEMIOLOGY : at 8 P.M.

Paper :

Dr. P. G. Stock : Some Considerations on the Use of Hydrogen Cyanide and Allied Substances with special reference to International Preventive Medicine. (Illustrated.)

HUNTERIAN SOCIETY.

MONDAY, Nov. 19th.—(At Cutlers' Hall, London.) Mr. W. B. Maxwell and Dr T. B. Hyslop : Medicine and Letters. To be followed by a discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY, Nov. 19th.—10 A.M., Mr. Maingot: Surgical Pathology. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards.

TUESDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.

WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 12.15 P.M., Dr. Burnford: Medical Pathology. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

FRIDAY.—11 A.M., Dr. MacDougal: Electrical Dept. 12 noon, Mr. Endean: Venereal Diseases. 2 P.M., Mr. Sinclair: Surgical Out-patients.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: OCTOBER–NOVEMBER, 1923.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, Nov. 19th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Papilloedema: Mr. Leslie Paton.

TUESDAY, Nov. 20th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Tumours of Spinal Cord: Mr. Armour.

THURSDAY, Nov. 22nd.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Electrical Testing of Muscles: Dr. Bailey.

FRIDAY, Nov. 23rd.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Demonstration of Physical Exercises in Exercise Room.

COURSE OF LECTURES AND DEMONSTRATIONS ON NEURO-PATHOLOGY.

MONDAY, Nov. 19th.—12 noon, Reactionary Changes in Central Nervous System, I.: Dr. J. Godwin Greenfield.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

C. M. HINDS HOWELL, Dean of Medical School.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.

THURSDAY, Nov. 22nd.—5 P.M., Mr. A. W. Bourne: The Treatment of Severe Forms of Puerperal Infection.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Nov. 22nd.—4 P.M., Mr. Addison: Tuberculosis of Spine.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

TUESDAY, Nov. 20th.—5 P.M., Dr. J. M. H. MacLeod: Bullous Formation and Diseases from the Pathological Side.

THURSDAY.—5 P.M., Dr. W. Griffith: Erythemato-squamous Dermatoses.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.

WEDNESDAY, Nov. 21st.—4 P.M., Dr. Saleeby: Sunlight and Disease.

THE PEOPLE'S LEAGUE OF HEALTH, 12, Stratford-place, Oxford-street, W.

Eight Lectures on the Mind and What We Ought to Know About It, at Hamilton House, Mabledon-place, W.C.

WEDNESDAY, Nov. 21st.—6 P.M., Fourth Lecture, Sir Maurice Craig: Habit, Adaptation.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES.

(At 3.30 P.M. each day.)

MONDAY, Nov. 19th.—(At the Children's Hospital.) Mr. Morrison: Surgical Tuberculosis.

TUESDAY.—(At the Southern Hospital.) Dr. Capon: Cardiac Disease in Children.

WEDNESDAY.—(At the Northern Hospital.) Dr. Stopford-Taylor: Early Diagnosis and Treatment in Venereal Disease.

THURSDAY.—(At the Stanley Hospital.) Dr. Oram: Radiological Examination of the Urinary Tract.

FRIDAY.—(At the Royal Infirmary.) Dr. Matthews: Medical Cases.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, Nov. 20th.—4.15 P.M., Mr. J. P. Buckley: Right-sided Abdominal Pain.

FRIDAY.—4.10 P.M., Prof. J. S. B. Stopford: The Sensory Pathway.

ANCOATS HOSPITAL.

(Special Course on Surgical Tuberculosis.)

THURSDAY, Nov. 22nd.—4.30 P.M., Mr. P. G. McEvedy: Abdominal Tuberculosis.

UNIVERSITY OF SHEFFIELD POST-GRADUATE LECTURES.

FRIDAY, Nov. 16th.—3.30 P.M. (At the Royal Hospital.) Dr. Wilkinson: Some Ear Emergencies.

UNIVERSITY OF BRISTOL POST-GRADUATE DEMONSTRATIONS.

FRIDAY, Nov. 23rd.—(At Boscombe.) Dr. G. Hadfield: Choice of Pathological Methods in Diagnosis.

Appointments.

CAVE, P. N., M.D. Oxf., M.R.C.S., L.R.C.P. Lond., D.P.H., has been appointed Medical Officer of Health to the Bromley R.D.C.

St. Thomas's Hospital: DYSON, A. D., M.R.C.S., L.R.C.P. Lond., MURRELL, E. B., M.R.C.S., L.R.C.P. Lond., COOPER, G. K., M.B., B.Ch. Camb., PALMER, H. M., M.R.C.S., L.R.C.P. Lond., LAUTRÉ, M. A., M.R.C.S., L.R.C.P. Lond., LUPTON, C. A., M.R.C.S., L.R.C.P. Lond., BRIGGS, T. F., M.R.C.S., L.R.C.P. Lond., and WILLIAMS, L. G., M.R.C.S., L.R.C.P. Lond., Casualty Officers and Resident Anæsthetists. STORY, A. G., M.R.C.S., L.R.C.P. Lond., COLE, L. B., B.A., M.B., B.Ch. Camb., GIBSON, C. P. R., M.R.C.S., L.R.C.P. Lond., and FULLER, C. B. S., M.B., B.Ch. Camb., Resident House Physicians. SMALLEY, L., M.R.C.S., L.R.C.P. Lond., Resident House Physician for Children. SUDBURY, F. B., M.R.C.S., L.R.C.P. Lond., DAVIES, D. A., M.R.C.S., L.R.C.P. Lond., HUGHES, K. E. A., M.R.C.S., L.R.C.P. Lond., and CROCKFORD, A. L., M.B., B.Ch. Camb., Resident House Surgeons. WILKINSON, M. C., M.R.C.S., L.R.C.P. Lond., Resident Orthopædic House Surgeon. KIES, J. P., M.R.C.S., L.R.C.P. Lond., and WALFORD, A. S. H., M.B., B.Ch. Camb., Resident House Surgeons for Ear, Nose, and Throat. MORRISON, R. G., M.R.C.S., L.R.C.P. Lond., Senior Obstetric House Physician. ALLEN, H. S., M.R.C.S., L.R.C.P. Lond., Junior Obstetric House Physician. DOGGART, J. H., M.R.C.S., L.R.C.P. Lond., Senior Ophthalmic House Surgeon. PENMAN, G. G., M.R.C.S., L.R.C.P. Lond., Junior Ophthalmic House Surgeon. CAVENAGH, J. B., M.B., B.Ch. Oxon., NEILSON, D. F. A., F.R.C.S. Eng., BARDSLEY, P. E., M.R.C.S., L.R.C.P. Lond., JONES, B. H., M.R.C.S., L.R.C.P. Lond., PEARCE, T. V., M.R.C.S., L.R.C.P. Lond., FACEY, R. V., M.R.C.S., L.R.C.P. Lond., GAUTIER-SMITH, C. E., M.R.C.S., L.R.C.P. Lond., FARQUHARSON, J. L., M.R.C.S., L.R.C.P. Lond., MARRINER, H. I., F.R.C.S. Edin., BATTSON, A. A., M.R.C.S., L.R.C.P. Lond., YATES, H., M.R.C.S., L.R.C.P. Lond., FARQUHARSON, S., M.R.C.S., L.R.C.P. Lond., METCALFE, G. A., M.R.C.S., L.R.C.P. Lond., TURNEY, H. F., M.R.C.S., L.R.C.P. Lond., WEBB-PEPLOE, M. H., M.R.C.S., L.R.C.P. Lond., HOPE-SIMPSON, J. W., M.R.C.S., L.R.C.P. Lond., WALKER, E. G. L., M.R.C.S., L.R.C.P. Lond., JEFFERY, A. L. P., M.R.C.S., L.R.C.P. Lond., STEVENS, A. L. B., M.B., B.Ch. Oxf., ALDEN, J. W., M.R.C.S., L.R.C.P. Lond., PULVERTAFT, R. J. V., M.R.C.S., L.R.C.P. Lond., FRANKLIN, C. A. H., M.R.C.S., L.R.C.P. Lond., ROBSON, T., M.R.C.S., L.R.C.P. Lond., HALLIWELL, C. C., M.R.C.S., L.R.C.P. Lond., SMITH, N. R., M.R.C.S., L.R.C.P. Lond., RICKMAN, J., M.B., B.Ch. Camb., and LOCKHART, L. P., M.R.C.S., L.R.C.P. Lond., Clinical Assistants.

Manchester Royal Infirmary: KLETZ, N., M.B., Ch.B. Manch., M.R.C.P. Lond., Senior Medical Registrar; HICKSON, S. K., M.B., Ch.B. Manch., Second Medical Registrar; NEWELL, R. L., M.D. Manch., F.R.C.S. Eng., Surgical Tutor; SMITH, E. P., M.B., Ch.B. Manch., Resident Medical Officer at the Central Branch; MILLS, N., M.B., Ch.B. Manch., Assistant Resident Medical Officer at the Central Branch; THOMAS, G., M.Sc. Manch., Second Assistant in the Clinical Laboratory.

Surgeons under the Factory and Workshop Acts: ADAM, J. R. M.B., Ch.B. Edin., D.P.H. (Kirkwall); HARVEY, A. G., M.D., B.Ch. Camb., L.R.C.P. Lond., M.R.C.S. (Wirksworth).

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne Union.—Chief Res. M.O. £500.

Birmingham and Midland Eye Hospital, Church-street.—Res. Surg. O. £150.

British Honduras.—Asst. M.O. $2430.

Bury County Borough.—Asst. M.O.H., &c. £600.

Cambridge, Addenbrooke's Hospital.—H.P. £130.

Dreadnought Hospital, Greenwich.—H.S. £150.

Edinburgh Royal Infirmary.—Supt. £700.

Evelina Hospital for Children, Southwark, S.E.—H.P. £160. Anæsthetist. 25 guineas.

Federated Malay States Hospitals.—Radiologist. £840.
Gravesend Hospital.—Jun. H.S. £100.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Dentist.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. £50.
Huddersfield, Storthes Hall Ministry of Pensions Mental Hospital.—Asst. Med. Supt. £850.
Liverpool Royal Infirmary.—Hon. Asst. Phys.
London County Mental Hospital Service.—Seventh Asst. M.O. £432.
London Temperance Hospital, Hampstead-road, N.W.—Cas. O. £150.
Manchester, Ancoats Hospital.—H.S. £100.
Manchester Royal Infirmary, Massage and Electrical Depts.—Asst. M.O. £100.
Manchester, St. Mary's Hospitals for Women and Children.—Two H.S.'s. Each £50.
Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.—Anæsthetist.
Metropolitan Hospital, Kingsland-road, E.—Asst. P.
Newport, Isle of Wight, County Mental Hospital.—Asst. M.O. £300.
Norwich, Norfolk and Norwich Hospital.—Hon. Asst. S.
Pontefract General Infirmary and Dispensary.—Res. Surg. O. £400.
Preston, Lancs, County Mental Hospital, Whittingham.—Locum Tenens M.O. £8 8s. weekly.
Queen Mary's Hospital for the East End, Stratford, E.—Anæsthetist. 50 guineas.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. Cas. H.S. £100.
Royal Free Hospital, Gray's Inn-road, W.C.—Med. Reg., Surg. Reg., and Gyn. Reg. Each £250. Cas. O. £100. H.S. (M.M.S.) and Obstet. Asst. £50 each. Also H.P., H.S., Asst. Cas. O., and Obstet. H.S.
Royal Northern Hospital, Holloway, N.—Asst. Radiologist. £150. Also Phys.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. and H.S. Each £100.
St. Albans City.—M.O.H., &c. £900.
St. Pancras Hospital and House, King's-road, N.W.—Jun. Asst. M.O. £350.
Sheffield, Jessop Hospital for Women.—Sen. Res. O. £250. Also Two Asst. H.S.'s. Each £100.
Southport General Infirmary.—Hon. Aural Surgeon.
Training Ship "Exmouth" (off Grays, Essex).—Visiting M.O. £250.
Union of South Africa Govt.—Asst. P.'s. £460.
University of London.—University Readership. £500.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Hon. Asst. S. 100 guineas.
West London Hospital, Hammersmith-road, W.—Hon. Asst. S. to Throat, Nose, and Ear Dept.
Willesden General Hospital, Harlesden-road, N.W.—H.S. £100.

Births, Marriages, and Deaths.

BIRTHS.

HESLOP.—On Nov. 1st, at Stone Field, Kidbrook-grove, Blackheath, the wife of Major A. H. Heslop, D.S.O., O.B.E., F.R.C.S. Eng., R.A.M.C., of a daughter.
HIGGINS.—On November 6th, at 7, St. George's-terrace, Regent's Park, the wife of T. Twistington Higgins, M.B., F.R.C.S., of a daughter.
MORTON.—On Nov. 6th, at Wellington-road, Bridlington, the wife of Dr. H. J. S. Morton, of a son.
ORME.—On Oct. 27th, the wife of Dr. Stuart Orme, of Chiltern Croft, Wendover, of a daughter.
TODD.—On Oct. 30th, at Lexham-gardens, W., the wife of H. C. Todd, F.R.C.S. Edin., of a daughter.

MARRIAGES.

ALLAN—DAVIES.—On Nov. 7th, at Liverpool, James Shewen Allan, L.R.C.S. Edin., to Muriel Davies, only child of Mr. and Mrs. Sydney J. Davies, of Bardwells, Roydon, Essex.
BOND—SKOU.—On Nov. 6th, at St. Thomas's, Orchard-street, Major A. H. Bond, R.A.M.C., to Rasmine Skou.
MYLES—CHIDLEY.—On Oct. 27th, at St. Mark's Church, Surbiton, Captain Robert Boulton Myles, O.B.E., M.B., Ch.B., R.A.M.C., to Emilie Stanier, only child of Horace Chidley, Captain, British India Line (Indian Service), and of the late Mrs. Chidley.
QUINTON—MURRAY.—On Oct. 31st, at Paddington, Percival G. Quinton, M.D., to Jessie, youngest daughter of the late J. D. Murray, Esq., of New Luce, Wigtownshire.

DEATHS.

CRIPPS.—On Nov. 8th, at Bentinck-street, London, William Harrison Cripps, F.R.C.S., of Glendaruel, Argyllshire, N.B., and Bentinck-street, London, aged 73.
GREEN.—On Nov. 5th, at "The Moorings," St. Albans, Thomas Henry Green, M.D., F.R.C.P., late of Wimpole-street, aged 81.
WOODROOFFE.—On Nov. 9th, George Borries Woodrooffe, M.B., B.C. Camb., of Intake, Sheffield, aged 54.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE LIMITATIONS OF PHYSIOLOGICAL STANDARDISATION.*

BY H. A. D. JOWETT, D.SC., PH.C.

TEN years ago I had occasion to state that, despite the increase in our knowledge of the active principles of drugs, in many cases the use of galenical preparations continued concurrently with that of their active principles. For example, though an enormous amount of work had been done on the alkaloids of opium, the tincture, though standardised to a definite content of morphine, still held its own among prescribers, and the same might be said of tincture nux vomica and strychnine. On the other hand, it was true that in certain cases—e.g., pilocarpine and cocaine—the use of these active principles had almost superseded that of their corresponding galenical preparations. The opinion was expressed that whilst the ultimate goal—both logical and practical—must be the use of active principles, it was our deficiency of knowledge that prevented the attainment of this ideal. Whilst the patient work of pharmacists and chemists had rendered possible the control of galenical preparations of many drugs by chemical means, there still remained some which could not thus be standardised. Physiological methods of control, therefore—more or less quantitative—had been evolved and used for several potent remedies, when prompt action was required, principally ergot, the digitalis group, cannabis indica, and extract of pituitary body. Recently this control has been extended to synthetic products of the arsenobenzol series and to active principles in an impure condition such as insulin. A prolonged experience (of nearly 20 years) in the manufacture of the majority of these preparations requiring physiological control has so impressed me with the limitations of this method and with the difficulties involved in the attainment of a degree of accuracy to which the chemist is accustomed, that I wish to point out some of the difficulties met with by manufacturers in preparing substances to meet a physiological standard.

The Importance of Accurate Standardisation.

I would again emphasise the point that the use of galenical preparations, either chemically standardised or physiologically controlled, is only an intermediate step to the ultimate goal which must be the use of active principles whose purity can be determined by chemical methods. In my opinion, the aim which we have constantly to keep in view is this: to provide the medical man with the knowledge that he can prescribe such active principle or principles together with other substances either to modify their action, increase or retard absorption, &c., with the certainty that he obtains exactly what he prescribes. He will always have to deal with one variant—namely, his patient—and the determination of the variation will depend on his diagnostic skill. It is therefore important that the remedy he decides to employ will not vary, and this can only be accomplished by the use of pure substances. In this connexion I may quote the opinion of a most eminent authority on this subject, Dr. Dale, now in charge of the biological testing of the Medical Research Council. In 1913 in a discussion on the relation of the galenical preparations of ergot to the active constituents—ergamine, ergotoxine, and hydroxyphenyl-ethylamine, he said: "As a medical man, he had no hesitation in saying the difficulty was really not so much on the pharmaceutical as on the medical side. . . . . What they needed above all, to put the ergot question on a really satisfactory basis, was more clinical experience. If medical men wanted ergotoxine then ergotoxine could be obtained. On the other hand, if the amines of ergot were what medical men needed then, personally, he thought ergot had no place in the Pharmacopœia at all." These remarks still apply, and not only to ergot but to other drugs.

Before proceeding to my subject proper, may I briefly allude to the progress of standardisation. The difficulty has only existed, within recent years, with drugs of vegetable or animal origin, for the inorganic drugs such as sulphur, Epsom salts, calomel, &c., have always been capable of chemical control. The first method of using drugs was to employ the whole material, and even to-day many are exhibited largely in this form, such as opium, rhubarb, senna, and the various animal extracts such as thyroid gland, &c. The next step was to separate the active constituents from known inert material and thus came into use tinctures, infusions, extracts, &c. With the advent of these

* Abstract of a lecture delivered at a meeting of the Pharmaceutical Society on Nov. 13th.

preparations arose the first attempts at control, such as determination of the extractive. Even to-day we have no knowledge of how to assay the value of the group of purgative drugs such as cascara, rhubarb, &c., and it is probably not necessary to attempt to value the activity—if such exists—of drugs such as dandelion. With the increase in our knowledge of the properties of alkaloids, methods of determining the total alkaloid content became available and one cannot overlook, in this connexion, the patient and classic work of the pharmacists, Farr and Wright. Further refinement took place in the determination of the active principles by isolating the alkaloid, such as morphine in opium, quinine in cinchona, or pilocarpin in jaborandi preparations, and, on the other hand, in the titration of the residue known as total alkaloid. There still remained a group of potent drugs for which no known chemical assay was available, and thus the methods of physiological control were welcomed. For 30 years they have been in use and have been improved by the work of numerous investigators and have now been officially recognised by the U.S.P. of 1916. Furthermore, the issue of certain remedies—viz., the arsenobenzol series and insulin—is only permitted after they have passed the biological tests of the Medical Research Council.

The Limitations of Physiological Control.

First let it be clearly understood what is meant by this term. It surely means the limit of experimental error of the method. Suppose samples of the same drug, chemically standardised or allowed a certain percentage of impurity, are submitted to analytical chemists in any part of the world, it will be found that their results will agree within a very small limit of error. For example, if a sample of opium properly taken and bulked is submitted to a number of analysts for determination of the morphine content, their results will be found to agree within ± 2 per cent. But no competent pharmacologist claims to test any biological preparations with this degree of accuracy; the error in most biological tests is about 20 per cent., in some tests greater, and in some cases it is difficult for the pharmacologist to say more than "high content," "medium," "poor," or "none."

The chief difficulties of physiological standardisation are (1) choice of method, (2) the standard, (3) variation in the animals used. The first two difficulties are well exemplified in the work of Burn and Dale on pituitary extracts. In dealing with the choice of method, they point out that if all the physiological actions or all those of therapeutic importance are due to a single active principle, any method capable of determining the relative concentration of that principle would be admissible, and that provided the action could be measured with accuracy it need have no relation to the therapeutic effect desired. But it should be pointed out that it is chiefly with these preparations where our ignorance as to the nature of the active principle or principles exists that physiological standardisation is necessary. If we had this knowledge we could adopt chemical standardisation and dispense with the physiological assay. Therefore, this difficulty of choice of method is inherent to physiological assay and is one of the causes of its limitations.

Having agreed, however, upon a method the next difficulty is having some standard against which to test the drug. For it must be noted that in most cases physiological standardisation has to be carried out by observing the effect produced by the unknown factor or drug against that obtained from a substance of known purity. In the case of pituitary extract the difficulty was to find a pure substance with which to compare the effect of the sample under examination. Burn and Dale tried histamine and potassium chloride but rejected both, and ultimately had to rely on an extract of pituitary gland prepared in a special manner. In this instance the standard adopted can be reproduced an indefinite number of times by competent workers and these successive "standards" when tested against—e.g., two ordinary good commercial pituitary extracts—would yield the same figure for relative potency on several occasions to within 20 per cent. of the true value of the sample or standard. Recent investigations indicate that it may be possible in the near future for all laboratories to obtain and use samples of dried stable material taken from the same batch of standard.

There is finally the variation in the animals chosen, not only individually but generally, produced by differences in climate, season, location, and feeding. The only way in which to solve this difficulty is to take the average of a series of results obtained from a number of animals. This leads, however, to practical objections. How many animals are to be used? The greater the number the less the experimental error, but who is to fix the limit? With the larger animals such as rabbits, the expense involved adds to the difficulty. In drawing attention to these difficulties of physiological testing, it should be pointed out that in discussing this question with several physiologists it is found that all are fully aware of the limitations of their tests. They would welcome the replacement by chemical methods and this is also the case with regard to serums. Only a year or two ago it was impossible to differentiate between a horse serum containing a large amount of antitoxin from one with no antitoxic content, unless one were allowed to use animals. Recently, however, a flocculation test has been discovered and now, under certain conditions, it is found possible not only to identify the antitoxin serum by in vitro test, but to determine its value to within narrow limits. Should further experience confirm the value and accuracy of this flocculation method, it will be welcomed with a sigh of relief by all those whose business it is to make or test antitoxin.

A Plea for Further Research.

There is no doubt that, despite these limitations and the accident of experimental error, the biological control of potent remedies, such as ergot, the digitalis group, the arsenobenzol group, pituitary extract, and insulin, is most desirable. It has been pointed out that a more accurate method of testing is to be sought, as the losses caused by an error of testing in the case of such costly material as insulin may be considerable. There is no need to feel alarm about the efficiency of physiological standardisation, but what one does want to guard against is assuming a greater degree of accuracy for this method of control than is actually the case. The limitations of the method emphasise the importance of replacing it as soon as possible either by chemical methods, if satisfactory ones can be produced, or, better still, by the employment of the pure active principles.

May I, in conclusion, make a special plea that I shall not be misunderstood. As chemists we are accustomed to prepare and submit substances of a required degree of purity with the utmost confidence—knowing that we can substantiate all claims if necessary by experimental demonstration—but this is not the case when substances have to be submitted to physiological control. Its present necessity must be fully admitted, and full justice should be done to the patient and skilful work of the physiologists who carry out this work. The value of our ability to control these potent medicaments—even if such control is liable to a greater error than the chemist is accustomed to—certainly receives full appreciation from both prescribers and chemists. It is, however, most desirable that physiologists should aim at reducing their errors as much as possible, and that manufacturers should coöperate in making their preparations as reliable as knowledge permits. There is no doubt that this is being done, but it should not be the final aim. What I do plead for especially is further research into the composition of these drugs, with a view to the isolation of the active principles and for knowledge as to the effect of accompanying substances on their action. Above all, I wish to emphasise the importance of coöperation between investigators, manufacturers, and the medical men, so that these remedies can be exhibited in a condition most certain to bring about the effect desired on the patient.

PROBLEMS OF HEALTH SERVICE IN RURAL DISTRICTS.

IN a lecture at the Royal Institute of Public Health on Nov. 7th Dr. W. A. Bullough set out the general lines of the scheme which has been adopted in the county of Essex with a view to preventing overlapping in the public health service. Dr. Bullough considered that a new mapping out of the sanitary areas and a replanning of the administrative units would be the best measure for dealing with an admittedly difficult problem, but since such changes were unlikely to be introduced in the next few years, it was necessary to meet the actual situation, and he believed that much could be achieved by coöperation between the existing bodies and by a combined medical service such as had been introduced, as an experiment, in Essex during the last four years. The aim had been to establish a combined service among the rural population and in urban districts of not more than about 20,000 inhabitants. In the county of Essex there were 47 sanitary authorities—5 boroughs, 25 urban districts, and 17 rural districts. Of these, 23 were served by part-time medical officers of health, 8 of whom were receiving a salary of £50 or less. While many part-time officers were doing excellent work, yet it was obvious that as a whole good work could not be expected where such salaries were paid, apart from the fact that their public duties might conflict with their private interests. Two or three medical officers of health had been appointed in Essex before the present scheme, under a section of the 1875 Act, but the great drawback was the size of the areas they were expected to serve, these being anything from 150,000 to 200,000 acres. The problems of time and distance had really driven Dr. Bullough to the idea of combination. Difficulties were sometimes experienced in getting different local health authorities to act together, but Dr. Bullough believed that where such unnecessary rivalry was found it was usually due to some lack of tact on the part of the officials.

In 1919 he had found one large combined area of 150,000 acres in the charge of a medical officer aged 85, who, though he had been a pioneer of public health work in earlier days, was no longer active; there were, in addition, a county council tuberculosis officer and a school medical officer, but the three had never even met each other. In another district a tuberculosis nurse and a school nurse, who had been working there for eight years, did not know each other. The large area referred to was split up into three, the combined medical officers of health being appointed for a trial period of one year. At the end of that time none had any difficulty to record, and the scheme had gone on automatically ever since. The objection that claims of a dual authority of the county council and the local health authority would clash had not materialised. When there was an appointment to be made the two bodies met, and the county council would make a selection of several candidates, any one of whom might be appointed by the local health authority, thus obviating any trouble on the score of the personal factor.

What had really happened in Essex was that the county had been split up into a series of smaller units than previously, but instead of being worked by two, three, or four medical officers, not always in harmony, the duties in the smaller areas were all carried out by one person. Dr. Bullough enumerated as advantages: (1) Avoidance of overlapping and unnecessary travelling; (2) efficiency, economy, and an all-round sound investment; (3) the prestige of the medical officer was raised, and the variety of duties added interest to his work; (4) public health tuberculosis regulations and treatment of tuberculosis could be more efficiently carried out; (5) school duties could be usefully combined with work in connexion with infectious diseases; (6) continuity of supervision and public health policy was maintained throughout the area; (7) confusion in the minds of parents, teachers, property owners, and the like was avoided; (8) relations between the various authorities were more harmonious; (9) the same policy applied to dental and nursing services.

CYNOGLOSSUM.

THE hound's-tongue, *Cynoglossum officinale*, is a common boraginous plant in this country containing two alkaloids which were shown by Dr. J. Gordon Sharp at the Therapeutical Society [1] in 1906 to bear some relationship to curare. Dr. Sharp found that cynoglossum renders the skin moist and hyperæsthetic, stimulation of the sciatic nerve or muscle only affecting the unpoisoned side, death occurring with the heart in diastole. Probably on this account the drug once possessed some reputation against hydrophobia, and a pill containing hound's-tongue among other ingredients survived in official formularies until the eighteenth century. We have received through Messrs. Wys, Muller and Co. (19A, Coleman-street, London, E.C.) a paper by Dr. E. Poulopoulos, of Athens, describing clinical experiments, first made 25 years ago in the surgical department of the Hospital Evangelismos under Prof. Galvani, in the use of cynoglossum powder as an application to malignant ulcers of the skin. Dr. Poulopoulos's subsequent experience leads him to believe that this action is not merely in the nature of a coincidence. The powder is spread daily on the wound with sterilised vaseline and after two or three weeks the ulcer tends to cicatrise at the edge, the healing process extending gradually towards the centre. He begins by cauterising the hard edges of the ulcer and applying chromic acid to the base. Cases are quoted in which the cure has persisted a number of years, but the author does not set out the microscopical evidence on which the ulcers were held to be of malignant nature.

TRANSMISSION OF "COLOUR-HEARING."

THE gift of "colour-hearing" is one which has sometimes embarrassed its possessor who has kept this particular light under a bushel for fear his friends should mark him down as a prospective inmate of an asylum. It seems, however, now to be generally agreed that the association of certain sounds with certain colours is not a morbid state, though it is undoubtedly rare. Psychologists have given the terms "synæsthesias" or "secondary sensations" to these curious correlations of the sense of colour with the senses of smell, taste, and sound. Goethe knew of this condition which, in 1881, was the subject of important researches in Germany. It was found by Bleuler and Lehmann that 12 per cent. of the 596 persons examined were in possession of synæsthesias. These vary considerably in degree; a "colour-hearer" may experience a certain definite colour sensation when he merely thinks of certain sounds and words without actually hearing them. This condition may become less noticeable with age, but throughout life certain sounds are associated with the same colours, a sound never giving rise to a sensation of green at one age and of red at another in the same person. Possessors of this gift are sometimes able to detect a discord only when they refer the matter to their colour sense. In a recent paper by Dr. H. Lundborg [1] an account has been given of a Swedish family in three generations of which this and other psychic phenomena were studied with a view to ascertaining whether or not they are inherited according to Mendel's laws. He has come to the conclusion that they follow these laws as faithfully as more material properties. In the first generation the father was a "colour-hearer." In the second generation there were three male and three female "colour-hearers," and in the third generation there was one male to two female "colour-hearers." In the same family such psychic qualities as a vivid imagination, a marked sense, or "bump" of locality, and a craving to travel or write were investigated, and it is interesting to note from the genealogical tables published by Dr. Lundborg that these qualities are handed down from one generation to another in a remarkably uniform manner.

[1] THE LANCET, 1906, i., 974.

COLONIAL HEALTH REPORTS.

Trinidad and Tobago.

Mr. T. A. V. Best, C.M.G., C.B.E., Colonial Secretary, in his report for the year 1922, states that the estimated population of the two islands is 374,650. The white population is chiefly composed of English, French, Spanish, and Portuguese, but the large majority of the inhabitants are natives of the West Indies of African descent, the balance being made up of East Indians, estimated at 121,249, and a small number of Chinese. The birth-rate was 31·82 and the death-rate 22·35 per 1000; the infantile mortality rate was 138·6 per 1000 births. The death-rates from the principal diseases were, per 1000: diarrhœa and enteritis, 1·78; malaria, 2·25; tuberculosis, 1·13; dysentery, 0·59; enteric fever, 0·54; and ankylostomiasis, 0·77. Influenza was prevalent generally, and was of mild type. There was no epidemic prevalence of any other disease. Venereal clinics on modern lines continue to be well attended at the out-patients' departments of the Colonial Hospitals in Port-of-Spain and San Fernando. On the recommendation of the Central Board of Health drainage schemes for the control of malaria are being carried out in the country districts. The intensive treatment of hookworm disease was continued by the Rockefeller International Board of Health, and the Central Board of Health coöperated by enforcing the establishment of latrines in advance of the treatment in the areas about to be operated in. The hospital accommodation provided comprises 340 beds at the Colonial Hospital, Port-of-Spain, 120 beds at the San Fernando Hospital, and 248 beds in the Government District Hospitals at Tobago, Arima, St. Joseph, Tacarigua, Couva, Prince's Town, and Cedro. There are small temporary hospitals at Sangre Grande, Mayara, and Toco. The climate of Trinidad—the most southerly of the West Indian islands—is tropical and may be divided into two seasons, a dry one from January to the middle of May, with an average rainfall of 2 to 3 in. a month, and a wet one from June to December, with an average of 8 in. per month. The coolest months are December to April. The average temperature during the day is 84° F. and during the night 74°. The conditions are healthy and by no means hurtful to Europeans, provided reasonable precautions are taken. Hurricanes are unknown.

Bermuda.

The official report for 1922 states that the population was estimated at 20,410—7001 white and 13,409 coloured. The birth-rate was 26·8 per 1000 among the white and 34·2 among the coloured population; the death-rate for the whites was 18·02 and for the coloured 19·2 per 1000. The infant mortality was 16·3 per cent. of living births, nearly one-half of the deaths occurring during the first month after birth. The number of stillbirths was equal to 4·4 per 100 living births. Illegitimate births numbered 12·6 per cent. of the total (3·4 for white and 16·8 for coloured population). The marriage rate was practically the same (8·40 per 1000) among both white and coloured. The average age at marriage was for bachelors 28, and for spinsters 22·5 years. The general health of the community in 1922 was good. Measles and influenza were prevalent during the winter, and whooping-cough was present throughout the year. There were 38 cases of typhoid fever, resulting in six deaths, which were in almost every instance directly traceable to defective sanitary arrangements. Typhoid infection through an infected water-supply is very rare, owing to the fact that every house is required by law to have an adequate rain-water cistern from which all supplies of drinking water are drawn. A leper asylum for the accommodation of eight lepers, hitherto not specially provided for, is being provided at Little Head, St. David's Island. In September certain members of the crew of the R.M.S.P. *Chignecto* were found to be suffering from a mild type of small-pox, and 41 passengers were placed under quarantine. Three of the contacts subsequently developed

[1] Acta Med. Scand., 1923, lix., 221.

the disease, but no further cases materialised. Owing to the prevalence of this disease in epidemic form in certain of the islands of the West Indies it has been found necessary to take special precautions in the case of all passengers landing from the West Indies. The rate of infant mortality continued high, being at the rate of 165 to 1000 births: the chief causes were the inexperience and neglect of mothers and improper food. A lying-in hospital for the mothers of the poorer classes and some sort of parental clinic for the education of mothers are badly needed. The general sanitary condition of the island is deplorable when considered in relation to the high wages earned by the poorer classes and the generally high standard of living which prevails. No less than 170 residences were found unprovided with sanitary conveniences of any kind, while out of 4634 inspections made by the Health Department defects were reported in 50 per cent. of the dwellings. There is no adequate system of scavenging in operation, with the result that the fly nuisance is a serious one. In the summer months mosquitoes breed in great numbers among the unburied tins which accumulate in the more thickly populated areas, and also infest the large undrained marshes, particularly in the vicinity of Hamilton. It is proposed to obtain the services of Dr. Andrew Balfour, of the Wellcome Bureau, to advise on the whole situation. About 24,500 tourists are estimated to have visited the colony during the year, an increase of about 7500 over the figures for 1921. The St. George's Hotel had an exceptionally successful season. The floating of the Hotel Bermudian Company marks a further step on the part of private enterprise towards the development of Bermuda as a resort calculated to attract a type of visitor who wants a high standard of comfort and luxury, and is prepared to pay for it; at the same time the needs of the tourist have also been catered for by the opening of the Royal Prince Hotel. There is no regular direct passenger service to the United Kingdom, but during the summer of 1922 the Elder-Fyffes Company ran seven direct passenger boats each way, in which the accommodation was largely sought after.

Fiji.

In his report for 1922 the Hon. T. E. Fell, C.M.G., Colonial Secretary, remarks that although the year was one of trade depression the general health of the native did not appear to have suffered. The birth-rate for the period was 33·58 and the death-rate 23·23 per 1000. No serious epidemic of infectious diseases occurred. A few cases of typhoid were reported, and the number of dysentery cases was very small; this latter disease, once a serious menace to Fiji, is now almost negligible. Considerable progress has also been made in combating tertiary yaws and kindred diseases. Over 4500 injections of salvarsan were administered, and the incidence of the disease is now much less frequent than in former years, especially amongst children. A serious effort was made to deal with ankylostomiasis under the auspices of the Rockefeller Foundation, over 40,000 cases of all nationalities being treated. This disease is very prevalent and continuous effort will be necessary to eradicate it, as re-infection occurs rapidly. The Fijians and East Indians were found to be affected in almost equal proportions, but the species of worm generally found in Fijians (*Necator Americanus*) is different from that in Indians (*Ankylostoma duodenale*). It is interesting to note that although Indian immigration began over 40 years ago, the amount of mixed infection should be so small. The infection is comparatively slight in parts where the rainfall is low, but very heavy where it is high. Correspondingly, the physique and general well-being of the Indian population are much higher on the dry than on the wet side of the main islands. Intravenous injection of chaulmoogra oil continues to give good results in leprosy, and several more cases have qualified for discharges from the asylum. Education, through native medical practitioners and other means, is removing from the native mind the belief in the desirability of infection of children with yaws. The salvarsan group of drugs is much sought after, and, if funds should allow, it is now practicable to consider the eradication of a disease almost as deadly in its after-effects as syphilis is elsewhere. "Fiji," writes Mr. Fell, "is exceptionally healthy for a tropical country. It is protected against most of the infectious fevers by its distance from a continent. The absence of the anopheles mosquito prevents the occurrence of malaria. Plague, yellow fever, small-pox, or cholera have never gained admittance. Neither scarlet fever nor diphtheria appears able to flourish. First attacks of appendicitis hardly ever occur in Fiji. Dysentery is a steadily decreasing cause of ill-health. The climate is, however, generally unsatisfactory for those suffering from tuberculosis or asthma. The moist heat has an enervating effect on the nervous system. . . . There is evidence of the desire among some of the younger generation of Fijians for a more individualised mode of living. This generally finds expression in the men leaving their towns and working as labourers in the plantations. Impetus has been given to this movement by the substitution of a considerable number of Fijians for Indian labourers in the sugar industry. Many of the men utilise the wages thus earned for communal purposes, such as in building iron-roofed houses in their towns and so obtaining relief from the constant work necessitated by repairs necessary to thatched native-built houses. A small number obtain exemption from communal duties and support themselves on their own plantations, whilst others earn their living as sailors, carpenters, boat-builders, and mill hands. Owing to their traditions of communal living very few Fijians ever attempt to engage in retail trade, and they remain content to leave their trade in the hands of Europeans, Indians, and Chinese. Although many of them are employed in operating marine engines, the driving of motor-cars is left entirely in the hands of Indians. On the other hand, the Fijians are taking very readily to the use of horses, and are evincing a keen interest in horse-racing. In some districts football and cricket are pursued with considerable keenness. Despite the increased tendency to become wage-earners, agriculture remains the main occupation of the Fijians. The cultivation of bananas, which was formerly largely in European hands, is now almost entirely under their control. In the sugar districts the natives are, in increasing numbers, employing more modern methods of cultivation, and are becoming accustomed to the use of European farm implements in the production of sugar-cane. A considerable number of them breed their own horses and bullocks, which they use for ploughing and general agricultural work."

A CRITICISED ADVERTISEMENT.

WE received, and duly published last week, an advertisement stating the terms offered by the Nottinghamshire County Council to applicants for the post of County Medical Officer. We learn that those terms do not conform to the scale of salaries approved by the Representative Body of the British Medical Association and the Society of Medical Officers of Health, but no warning reached us at the time from either body, and none has been received since. But an anonymous letter demands an explanation from us. Here it is. One communication was received Nov. 13th, dated Nov. 10th, from Nottingham, with a reference to a local advertisement which had appeared previously. This letter asked us to withhold publication from an issue of THE LANCET which had been published three days before. The advertisement has been stopped, but we did not receive any assistance from the places whence it should have come.

TETANUS FOLLOWING OPERATION FOR APPENDICITIS.

AT an inquest before the deputy coroner of Preston on Nov. 8th a verdict of "Death from misadventure" was returned on a woman, aged 38, who was operated on for appendicitis in Mount-street Hospital, and died from tetanus after appearing to progress favourably. Antitetanus serum had been injected. The medical attendant suggested that the tetanus was set up by the catgut used in the operation. The coroner pointed out that every precaution was taken to sterilise catgut, and that used in the hospital was obtained from the best firms, but in this case the bacillus or its spores might have resisted the sterilisation.

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